L. XI, No. 1
NUARY 1950

Journal of the

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AMERICAN PHARMACEUTICAL ASSOCIATION

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Practical Pharmacy Edition

81727

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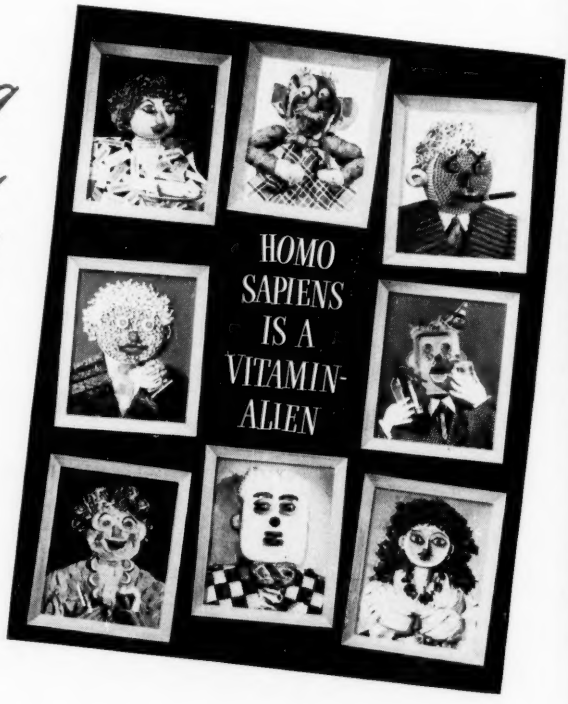

• More and more frequently these days dominant *Dayamin* is prescribed when multiple-vitamin therapy is indicated.

• Persuasive promotions, featuring the *Dayamin* characters, make these potent capsules the most discussed product in the ethical vitamin field. And ABBOTT proposes to see that every physician in your territory appreciates the ease and efficacy of *Dayamin* dosage. • So, as the program develops momentum, join with us in emphasizing the point that, day after day it's *Dayamin*—the easy-to-swallow capsule that provides optimum daily adult requirements of six essential vitamins, plus pyridoxine and pantothenic acid.

In bottles of 30, 100 and 250 capsules.* Are you *sure* you have an ample stock? Abbott

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*Alert your clerks to pointing out the advantages of the next larger bottle size."

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safe and effective reduction
of elevated blood cholesterol
with lipotropic therapy

"Clinical and experimental observations indicate that lipotropic factors [choline, methionine and inositol] . . . prevent or mitigate the deposition of cholesterol in the vascular walls of rabbits and chickens and seem to exert a decholesterolizing effect on atheromatous deposits in man, chickens and rabbits."

These findings suggest the therapeutic possibilities of lipotropic Methischol in the prevention and possible treatment of atherosclerosis.

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Suggested daily therapeutic dose of 3 tablespoonsful or 9 capsules contains:

*Choline Dihydrogen Citrate (Choline . . . 1 Gm.)**	*2.5 Gm.*
dl-Methionine	*1.0 Gm.*
Inositol	*0.75 Gm.*
Liver Fractions from	*36.0 Gm. liver*
**present in syrup as 1.15 Gm. choline chloride*	

Supplied in bottles of 100, 250, 500 and 1000 capsules, and 16 oz. and one gallon syrup.

methischol

combines major lipotropic agents
for specific therapy in reparable liver damage . . . cirrhosis,
fat infiltration, functional impairment,
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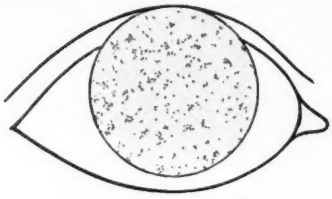
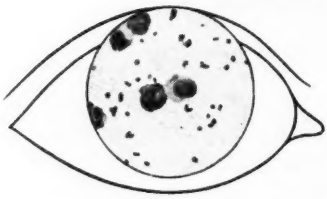
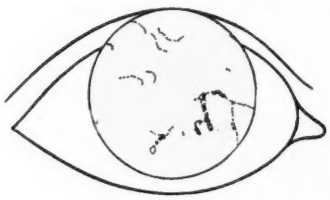
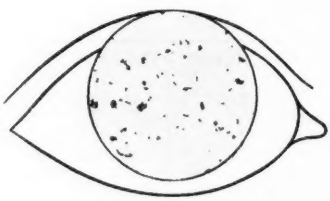
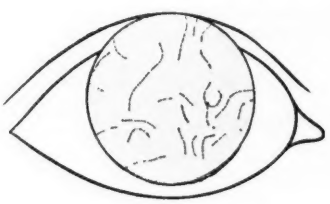


Bacteria that "don't blink an eye"









Infectious organisms that "don't blink an eye" a penicillin can often be controlled with bacitracin the practical new antibiotic. While its antibac terial activity parallels that of penicillin, resistan strains of penicillin-susceptible organisms may b sensitive to bacitracin. Unlike penicillin, sens tivity rarely follows its use in local therapy. Fur thermore it is not inactivated by blood, plasma pus or necrotic tissue.

Current nationwide detailing to physicians stresse the extensive clinical evidence of the value o bacitracin – particularly in local treatment o superficial infections, in conjunction with course of parenteral penicillin and streptomycin therap for deeper or more extensive cutaneous infection —and its tolerance by penicillin-sensitive patient

Stability studies by Upjohn research workers hav made it possible to supply druggists with this com plete line of stable bacitracin products, in con venient forms for clinical use.

BACIDRIN*: *nose drops with ephedrine*

BACI-TROCHE*: *tablets for infections of th mouth and throat*

BACIGUENT* OINTMENT: *for topical use*

BACIGUENT OPHTHALMIC OINTMENT: *for superficial eye infections*

BACITRACIN-TOPICAL: *sterile vials of powde to make locally-applied solutions*

*Trademar

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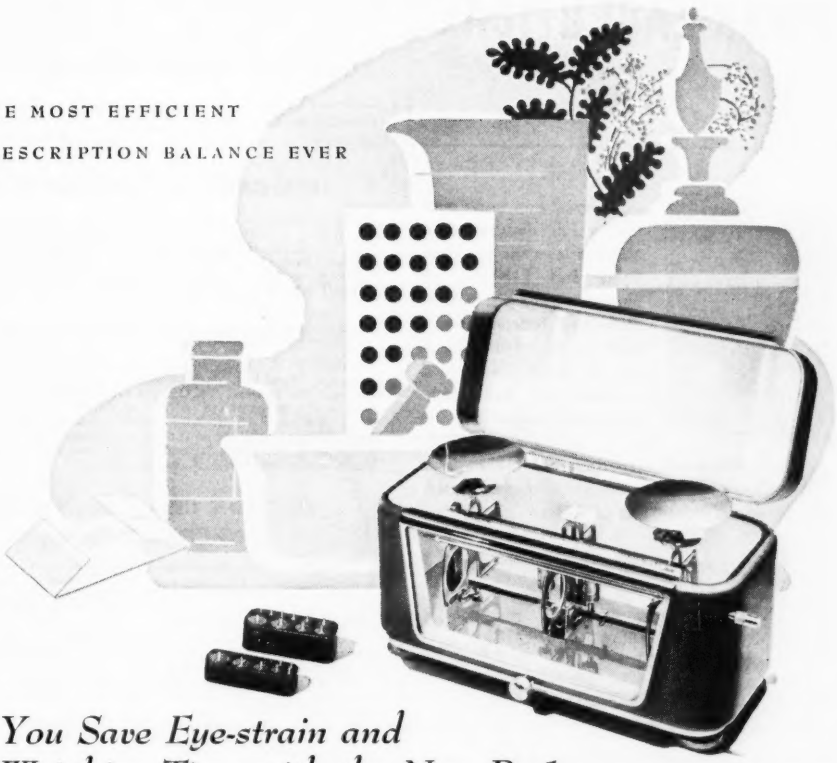
Research ***in the service of the profession of pharmacy***

THE MOST EFFICIENT
PRESCRIPTION BALANCE EVER



You Save Eye-strain and Weighing Time with the New Rx-1

Designed by
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Faster Weighing...you can forget all the tiny, troublesome weights below 15 grains or 1 gram...the beam rider makes all these fine adjustments. And you center a *single* pointer on a wide, easily readable index scale, instead of waiting for two pointers to come together.

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More Accurate Weighing...the 1/3.2 grain sensitivity of the new Torsion Rx-1 actually exceeds the U. S. Bureau of Standards requirements for a 'Class A Prescription Balance.'

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sensitivity 1/3.2 grain
$175 (weights extra)

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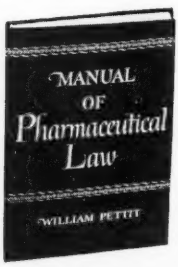
Ask your Drug Supply Salesman to show you additional pictures and complete specifications of the Rx-1.

Manual of PHARMACEUTICAL LAW



A compact new book containing full discussions of the drug laws and the legal rights and liabilities of pharmacists and pharmacies. State and federal powers used in the regulation of drugs, medicines and pharmacy are given complete consideration.

The book also describes the business units available to pharmacists and discusses the advantages and disadvantages of these.

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- FOOD, DRUG, AND COSMETIC ACT
- FEDERAL NARCOTIC LAW
- FEDERAL PUBLIC HEALTH SERVICE ACT
- POSTAL LAW

Written by William Pettit, Attorney-at-law; Lecturer in Pharmaceutical Jurisprudence, University of Pittsburgh

170 pp. **$2.75**

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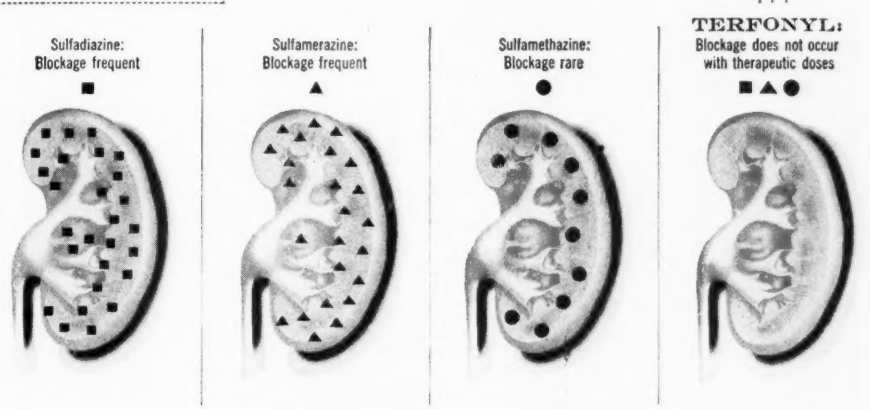
TERFONYL

Sulfadiazine
Sulfamerazine
Sulfamethazine

FOR SAFE SULFONAMIDE THERAPY

Low Renal Toxicity



With usual doses of Terfonyl the danger of kidney blockage is virtually eliminated. Each of the three components is dissolved in body fluids and excreted by the kidneys *as though it were present alone.* The solubility of Terfonyl is an important safety factor.

Terfonyl contains equal parts of sulfadiazine, sulfamerazine and sulfamethazine, chosen for their high effectiveness and low toxicity.

Terfonyl Tablets, 0.5 Gm. Bottles of 100 and 1000

Terfonyl Suspension, 0.5 Gm. per 5 cc.
Appetizing raspberry flavor • Pint and gallon bottles

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AT NO EXTRA COST MODERNIZE YOUR PRESCRIPTION DEPARTMENT

All eight sets of Merck "fused-label" chemical bottles are ready for shipment: featuring *dual labels that are part of the glass itself*—moistureproof, dirtproof, virtually immune to scratch marks. There's no premium charged for the "fused-label." Order any or all of these sets; consult your wholesaler or Merck salesman for complete list.

MERCK & CO., Inc. *Manufacturing Chemists* **RAHWAY, N. J.**

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increasingly better cough control

***Increasingly,** pharmacists*
are asked to fill prescriptions for

Benylin
Trade Mark
Expectorant

Increasingly, physicians prefer this distinctive preparation, which combines Benadryl Hydrochloride (10 mg. per teaspoonful) with other *non-narcotic* remedial agents to provide

1. safe and effective control of cough (whether due to allergy or common cold); and also
2. prompt relief of associated discomfort and distress

Benylin Expectorant relieves the irritated mucosa of the upper respiratory tract and aids in the liquefaction and removal of mucous secretions. Its antispasmodic and decongestant actions relax the bronchial tree and reduce bronchial congestion, nasal stuffiness, sneezing and lacrimation. Increasingly, patients comment on the effectiveness of BENYLIN EXPECTORANT and on its pleasant, mildly tart flavor.

Benylin Expectorant contains in each fluid ounce:

Benadryl Hydrochloride (diphenhydramine hydrochloride Parke, Davis & Co.)	80 mg.
Ammonium Chloride	12 gr.
Sodium Citrate	5 gr.
Chloroform	2 gr.
Menthol	1/10 gr.

Benylin Expectorant is supplied in 16 ounce and gallon bottles. BENYLIN EXPECTORANT fills a practical need in medical practice and is therefore a practical preparation for the pharmacist to stock in ample supply against prescription demands.

PARKE, DAVIS & COMPANY DETROIT 32, MICHIGAN

New prescription product

Product descriptions may be clipped and filed on three- by five-inch cards. These are also indexed for quick reference in the "Monthly Drug Index" appearing on the last page of each issue. A product is described in this column for the information of pharmacists who may be asked by physicians to stock the drug, or who may receive professional inquiries about it. A listing does not imply evaluation or recommendation by the Association, nor does omission of any product have significance concerning its merit.

ADSORL

Description: Dispersible vitamin A and D drops; a concentrated solution of synthetic fat soluble vitamins A and D in a fat dispersing agent, Sorlate (sorbitan monooleate polyoxyethylene derivative). Each cc. contains 50,000 units vitamin A and 10,000 units vitamin D.

Form Supplied: In 10-cc. and 30-cc. bottles with calibrated dropper.

Action: Vitamin A and D therapy.

Administration: Orally, dilution before administration results in practically tasteless form.

Source: Abbott Laboratories, N. Chicago, Ill.

ANTOPIC CREAM

Description: A cream containing 5% of the antihistamine, pyranisamine maleate, calamine, zinc oxide and benzocaine in a water soluble base.

Form Supplied: 1 3/8-oz. tubes; on prescription only.

Action: Treatment of atopic dermatitis, pruritus ani and contact dermatitis.

Administration: Topically.

Source: Smith-Dorsey Co., Lincoln, Nebr.

BASALJEL

Description: Basic aluminum carbonate gel, a new form of alumina gel with high aluminum content.

Form Supplied: 12-fl.-oz. bottles.

Action: For prophylaxis of resistant phosphatic stone occurring in kidneys, ureters and bladder.

Administration: Orally, as determined by the physician.

Source: Wyeth, Inc., Philadelphia 3, Pa.

CILLORAL

Description: A dry powder combination of buffer and crystalline penicillin G potassium. In the dry state, Cilloral maintains full label potency without refrigeration for 18 months. When in solution, Cilloral may be kept at refrigerated temperature for one week without significant loss of potency.

Form Supplied: Packaged as a powder containing 1,200,000 units in a bottle of 2 fluidounces. With the addition of 45 cc. of water, 12 teaspoonful doses of 100,000 units each are provided.

Action: Treatment of diseases amenable to penicillin.

Administration: Orally, as indicated by the physician.

Source: Bristol Laboratories Inc., Syracuse, N. Y.

CONFETS

Description: Candy wafers each containing 50,000 units of buffered crystalline penicillin G potassium. Designed primarily for use in children.

Form Supplied: Glass tubes of 12 wafers.

Action: Treatment of oral infections amenable to penicillin.

Administration: Orally, as determined by the physician.

Source: Schenley Laboratories, Inc., New York 1, N. Y.

JENETTES

Jenettes is the new trade name for Penettes penicillin chewing gum, manufactured by Bristol Laboratories, Inc., Syracuse, N. Y.

LISSEPHEN

Description: Capsules each containing 0.25 Gm. of mephenesin (3-*o*-toloxy-1,2-propanediol), a compound known in Europe as Myanesin.

Form Supplied: Bottles of 100 and 1000 capsules.

Action: It has been shown that the compound often produces marked relaxation of muscles in conditions characterized by spasticity due to lesions in the brain or spinal cord.

Administration: Orally, suggested adult dosage is four 0.25-Gm. capsules 3 to 5 times daily. Treat-

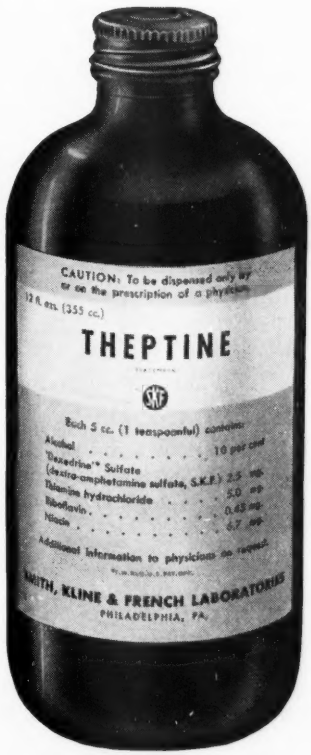
(*Continued on Page 10*)

announcing . . .

Theptine

an anti-depressant and restorative elixir

'Dexedrine'* plus essential B vitamins


CAUTION: To be dispensed only by
or on the prescription of a physician
12 fl. ozs. (355 cc.)
THEPTINE
SKF
Each 5 cc. (1 teaspoonful) contains:
Alcohol . . . . . 10 per cent
'Dexedrine'* Sulfate
(dextro-amphetamine sulfate, S.K.F.) 2.5 mg.
Thiamine hydrochloride . . . . 5.0 mg.
Riboflavin . . . . . 0.43 mg.
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Additional information to physicians on request.
SMITH, KLINE & FRENCH LABORATORIES
PHILADELPHIA, PA.

THEPTINE gives the physician an effective means of restoring mental and physical tone in the depressed and debilitated patient.

THEPTINE was proved in a large test area. You should, therefore, expect and prepare for rapid turnover.

THEPTINE is packaged in 12 fl. oz. bottles: list price, $18.72 doz.

For best retail profit, order at least ¼ doz. bottles from your wholesaler TODAY.

Smith, Kline & French Laboratories, Philadelphia

*T.M. Reg. U.S. Pat. Off. for dextro-amphetamine sulfate, S.K.F.

NEW PRESCRIPTION PRODUCTS

(*Continued from Page 8*)

ment should be discontinued after 3 or 4 days if there is no evidence of response.

Source: Abbott Laboratories, N. Chicago, Ill.

MYTINIC

Mytinic is the new trade name for Vytinic, oral hematinic, manufactured by Bristol Laboratories, Inc., Syracuse, N. Y.

NORISODRINE SULFATE

Description: Isopropylarterenol sulfate (α-isopropylaminomethylprotocatechuyl alcohol sulfate) in two powder formulas (10% and 25% for oral inhalation in Aerohalor cartridges); also in solution (each cc. containing 10 mg.) for use in a hand nebulizer or by oxygen aerosolization.

Form Supplied: Powder (10% and 25%) in Aerohalor cartridges containing 100 mg. of powder, boxes of 12.

Solution (1:100) in bottles of 10 cc.

Action: A bronchial antispasmodic chemically related to epenephrine and ephedrine.

Administration: Inhalant. Warning: Dosage and frequency of administration must be cautiously and carefully adjusted to the need and response of the individual patient.

Source: Abbott Laboratories, N. Chicago, Ill.

NUCLON

Description: Capsules each containing the antihistamine Thenylpyramine (methapyrilene) fumarate 37.5 mg.; Dexedrine (dextro-amphetamine) sulfate 1.25 mg.; and aspirin 2.5 gr.

Form Supplied: Bottles of 50 capsules; on prescription only.

Action: For treatment of the common cold using the combined anthistaminic-analgesic-antipyretic therapy with the addition of an antidepressant.

Administration: Medication should begin as soon as possible after onset, using two capsules every 4 hours for 3 or 4 doses daily. Use with caution in patients hypersensitive to sympathomimetic compounds or where vasoconstrictors are contraindicated.

Source: Smith, Kline & French Laboratories, Philadelphia, Pa.

ORTHOXICOL

Description: A syrup, each 100 cc. of which contains:

Dihydrocodeinone bitartrate	36.5 mg.
Orthoxine (methoxyphenamine) hydrochloride	0.338 Gm.
Hyoscyamine hydrobromide	2.0 mg.
Sodium citrate	6.5 Gm.

Form Supplied: Pint and gallon bottles.

Action: Bronchodilator action of Orthoxine, enhanced by hyoscyamine, is combined with the sedative action of dihydrocodeinone.

Administration: Orally, recommended adult dosage 1 to 2 teaspoonfuls every 3 hours.

Source: The Uphohn Co., Kalamazoo 99, Mich.

PABASYL TABLETS

Description: Enteric coated tablets each containing sodium salicylate 0.3 Gm., para-aminobenzoic acid (sodium salt) 0.3 Gm., and ascorbic acid 10 mg.

Form Supplied: Bottles of 100 tablets.

Action: Treatment of rheumatic fever, arthritic states, and other conditions usually treated by salicylate therapy.

Administration: Two tablets 3 times daily.

Source: Ives-Cameron Co., Inc., New York 16, N. Y.

PABERIN

Description: Capsules, each containing para-amino-benzoic acid 0.23 Gm., and aspirin 0.23 Gm.

Form Supplied: Bottles of 100 and 1000 capsules.

Action: Treatment of rheumatic fever, arthritic states, and other conditions usually treated by salicylate therapy.

Administration: 2 to 3 capsules orally for 8 to 12 doses; treatment to be continued in amounts providing effective salicylate level. Caution: Should not be used in conjunction with sulfonamide therapy

Source: Smith-Dorsey Co., Lincoln, Nebr.

PANPARNIT

Description: Tablets each containing 12.5 mg. or 50 mg. of Panparnit (caramiphen hydrochloride), previously known as Parpanit. Chemically, the product is diethylaminoethyl-1-phenylcyclopentane-1-carboxylate hydrochloride. [See THIS JOURNAL **40**: 240 (1949)].

Form Supplied: (Package form not stated by manufacturer).

Action: For reduction of rigidity and tremor in Parkinson's disease, apparently by blockage of proprioceptive impulses arising in muscles and joints which diminishes the intensity of the reflexes causing muscular rigidity in the Parkinsonian syndrome.

Administration: Orally, as indicated by the physician.

Source: Geigy Co., Inc., New York, N. Y.

PONDETS

Description: Fruit flavored troches each containing 20,000 units of crystalline penicillin G potassium in a slowly dissolving base.

Form Supplied: Packaged in 8-oz. wide-mouth bottles.

Action: Treatment of oral infections amenable to penicillin.

(*Continued on Page 60*)

ORETON

a dosage form is available for every indication

high dosage and sustained action

ORETON* (Testosterone Propionate U.S.P. XIII) in oil for intramuscular injection in male hypogonadism and climacteric, functional uterine bleeding, inhibition of lactation and palliation of female breast carcinoma.

moderate and maintenance dosage

ORETON-M* Tablets (Methyltestosterone U.S.P. XIII) by mouth in mild male climacteric, functional dysmenorrhea, premenstrual tension and relief of postpartum breast engorgement.

single dose with continuous action

ORETON-F* Pellets (free testosterone) by subcutaneous implantation for sustaining therapy in eunuchism, eunuchoidism and in some cases of the male climacteric.

convenient buccal administration

ORETON Buccal Tablets (Testosterone Propionate U.S.P. XIII) in POLYHYDROL† base for intraoral administration when high dosage is desired and injection therapy is not feasible.

local application

ORETON-M Ointment (Methyltestosterone U.S.P. XIII) for percutaneous application in certain senile skin disturbances, especially those accompanied by pruritus.

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†POLYHYDROL trade-mark of Schering Corporation

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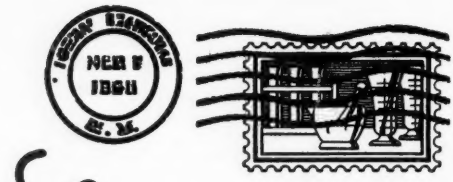

Letters:

A Life Member

Sirs:

Your letter reminds me that I have been a member of the ASSOCIATION for twenty-seven years and while just at present I am not as active in pharmacy as I have been up until recently, there is a very deep sentiment in connection with retaining my membership in the ASSOCIATION.

I am happy to say that arrangements have been completed for my transfer from annual to life membership.

I joined originally at the behest of R. O. Hurst who is now Dean of the Ontario College of Pharmacy and who at that time felt that more members of the profession in Canada should belong to the AMERICAN PHARMACEUTICAL ASSOCIATION than was the case then.

Montreal, Canada — WILLIAM HARRISON

Wishes to Exchange Journals

Sirs:

I would like to contact an American pharmacist with a view to the regular exchange of trade journals.

If you could assist me by putting me in touch with a pharmacist, preferably one who is interested in the veterinary side of pharmacy, who would like to receive the *Pharmaceutical Journal* in exchange for your own JOURNAL, I would be very grateful for your help.

84 Holden Road
London N. 12, England — A. E. Moss

Easy Does It

SIRS:

I am enclosing my yearly dues—the easiest payment that I make all year. It is easy because I feel that the A. PH. A. does more for pharmacy than any other single group.

Geneva, Ohio — RALPH G. REES

Health Information Program at Work

Sirs:

The bulletin and counter card from the second kit of material in the current Health Information Program have been posted for the information of our staff.

The service is indeed appreciated and I wish to take this opportunity to thank you for it.

SISTER MARY GENTILLA OLENDER, R. P.
Nazareth Hospital
Philadelphia, Pa.

A Good Value

Sirs:

I am enclosing my check covering active membership dues for 1950.

Where can one get more value for his money? You tell me.

Los Angeles, Calif. — WILLIAM BERNFELD

Food for Thought

Sirs:

There has never been a display card in our pharmacy which has brought more comment than your card entitled "Your Heart Does a Big Job."

This card has attracted so much attention that we thought we would write you and tell you about it. It gives everyone food for thought.

Akron, Ohio — HENRY A. LIN

Note on Dues Statement

Sirs:

This is one bill I don't mind paying!

Redlands, Calif. — JANICE M. KENNED

EDITOR'S NOTE:

The above was written across Miss Kennedy's statement which she returned with her dues. She is a former member of the University of Southern California Student Branch and this is her first payment of dues as an active member.

Reciprocity in Syria

Sirs:

The Department of State has been informed through the American Legation at Damascus, Syria, that foreigners are permitted to practice pharmacy in Syria on a reciprocal basis.

It is thought that this information may be of interest to members of your ASSOCIATION and others who may be reached through whatever channels you may have for the dissemination of information of this type to pharmacists throughout the country.

Washington, D. C. — JAMES FREDERICK GREEN
(For the Secretary of State)

prescription price . . . *AND PROFIT!*

TYROZETS were the first throat lozenges to contain *tyrothricin* and *benzocaine:* they're the antibiotic lozenge most doctors think of when they prescribe this form of therapy; and they're still the *tyrothricin* lozenge asked for most often in pharmacies, with or without a prescription.

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JANUARY, 1950

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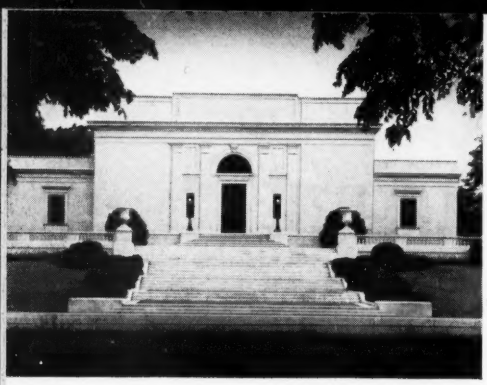


STRAIGHT FROM HEADQUARTERS

By ***ROBERT P. FISCHELIS,*** Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

1950 Under Way

The new year will be off to a good start by the time this issue of our publication reaches you. It will be our endeavor to help make 1950 a happy and satisfying year, from the standpoint of accomplishment, for the pharmacists of America.

One of the first notable pharmaceutical events of 1950 was the meeting of the Council of the A. PH. A. held in Washington, January 5, 6, and 7. There is time for only a brief review of the meeting as this issue is about to go to press.

The Council spent three busy days reviewing current A. PH. A. activities and proposals for the 1950 program. It received the reports of its officers and committees and found the ASSOCIATION to be in a healthy condition financially and otherwise. While the anticipated income for 1949 had not been reached completely, the expenditures had been kept so well in bounds that the operations for the year showed a balance of approximately $25,000 of income over expenditures.

Plans for the 1950 convention were reviewed and approved and the Council also gave serious consideration to the program for the centennial convention which will be held in 1952. The advisability of issuing a historical volume at that time to commemorate a century of progress in pharmacy and to record the history of the ASSOCIATION was discussed and further consideration will be given to this proposal by the appropriate committees.

The organization of a Student Branch at the College of Pharmacy, University of New Mexico was approved. The date for the 1950 National Pharmacy Week was definitely set for October 29 to November 4. It was found that there were a number of conflicting events in October which made the dates selected more suitable than the week of October 15, originally announced as National Pharmacy Week.

A report from Dr. Justin L. Powers, chairman of the Committee on National Formulary, indicated that the work on N. F. IX is well advanced and that the new edition is expected to be ready about the middle of the year.

The Committee of Six, which has been studying the organizational structure of the ASSOCIATION, has made certain recommendations with respect to the revision of its By-Laws, which were reported to the Council. It was decided to arrange for an extra general session at the convention at which the proposed changes in By-Laws may be considered and acted upon by the membership.

A part of one of the afternoon sessions was given over to a conference with representatives of the executive committee of the American Society of Hospital Pharmacists. Minimum standards for hospital pharmacies were approved and arrangements were made for their implementation through the Division of Hospital Pharmacy of the A. PH. A.

The agreement between the American Society of Hospital Pharmacists and the AMERICAN PHARMACEUTICAL ASSOCIATION with respect to the affairs of the Division of Hospital Pharmacy was revised to provide for the appointment of Mr. Don Francke as director of the division on a part-time basis

and the continuance of Miss Gloria Niemeyer as assistant director. The secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION, who has been acting as director of the Division, becomes chairman of the Policy Committee.

The Council approved the development of the Commission on Professional Manpower for Pharmacy including a limited expenditure of funds to explore procedures for establishing a directory of pharmacists to be published by the ASSOCIATION.

An interesting report of the activities of the A. PH. A. Mission to Japan was made by President Jenkins and colored motion pictures taken by members of the Mission were shown at one of the dinner sessions of the Council. President Jenkins also presented to the ASSOCIATION a Japanese ceremonial sword and other gifts which had been bestowed upon the Mission during its sojourn in Japan. Authority was granted by the Council for the translation of certain A. PH. A. publications into Japanese at the request of the Japanese Pharmaceutical Association.

A Committee on International Affairs was named to give consideration and study to many problems that are being submitted to the ASSOCIATION from international sources.

It was decided to extend an invitation to the Atlantic City convention to the members of the special committee which has been working on international standards for drugs under the auspices of the World Health Organization of the United Nations.

The Council re-elected Dr. W. Arthur Purdum as a member of the Committee on National Formulary and elected Dr. Justin L. Powers as chairman of the Committee on National Formulary to succeed himself. Dr. George D. Beal was named to succeed himself as a member of the American Council on Pharmaceutical Education.

The total membership of the Association was reported at an all time high, having reached nearly 22,000. A special committee was appointed to arrange for a drive to increase the membership to 30,000 by the Centennial Meeting in 1952.

Another meeting of the Council will be held prior to the annual convention, if necessary, and the officers of the Council were given authority to arrange for such a meeting.

A Valuable Publication

With the January *Scientific Edition* of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION every member will receive a Supplement containing the list of members in good standing as of October 31, 1949. In addition to the membership list, this Supplement will also contain the official roster and directory of officers and committees for 1949–50 and an authentic current list of boards of pharmacy and their secretaries, state pharmaceutical associations and their secretaries, a list of the local and student branches with their officers and a list of national, sectional, state and local publications in the field of pharmacy.

This Supplement will also contain a list of national pharmaceutical associations and related professional societies and the various conferences and commissions in which the A. PH. A. holds membership.

This Supplement, issued for the first time with the March, 1949, number of the *Scientific Edition* of the JOURNAL, proved to be of such value and importance to our members and to libraries and information bureaus that it will be made an annual publication to be issued in January of each year. It is furnished only to members of the A. PH. A. and subscribers to the *Scientific Edition* of the JOURNAL.

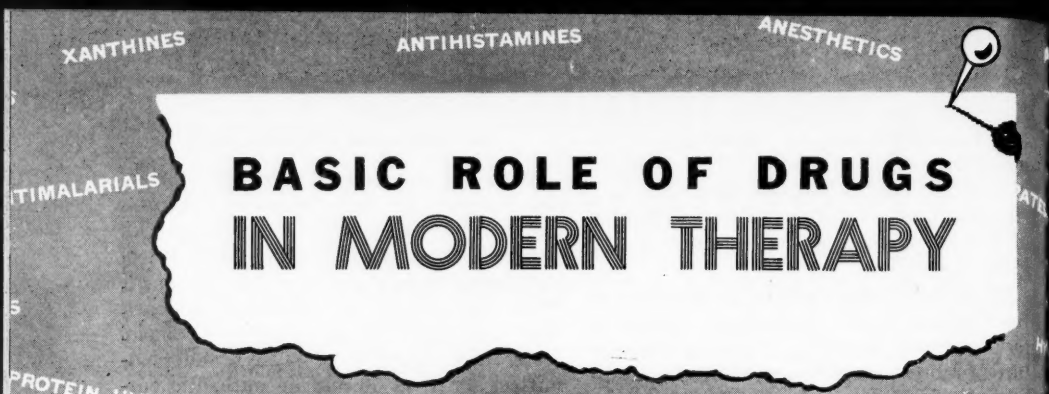
Nurses Should Be Qualified

ACCORDING to Dr. Esther Lucille Brown of the Russell Sage Foundation, who made a definitive study of the nursing profession, "Anyone may put on a uniform and simply call herself a 'nurse.'"

In an article in the October issue of *Good Housekeeping*, she cites the fact that the 280,000 registered nurses, with three or four years of specialized training, who are practicing in the country today are outnumbered by "some 300,000 other women who call themselves nurses, or sometimes practical nurses, but who lack the most elementary knowledge of their profession."

Contrasted with the three States—New York, Arkansas and Louisiana—which have recently passed laws forbidding any unlicensed person to nurse for hire, there are 45 remaining States which "still allow any unlicensed, untrained person to call herself

(Continued on Page 49)



BASIC ROLE OF DRUGS IN MODERN THERAPY

*By J. M. HAYMAN, Jr., M. D.**

Professor of Medicine
Western Reserve University · Cleveland, Ohio

WHEN or why man first began to eat certain substances with the hope of curing disease is unknown. The custom must be about as old as man himself, and perhaps older, for some animals will seek out foods when sick that they will not touch when well.

Nor can we tell how much of the ancient use of herbs was based on an inherent belief in magic, and the benefits therefore psychological, and how much was physiological. The doctrine of signatures, which played such a conspicuous part in medical practice in Europe only a few hundred years ago, has its roots in Chinese practice, some 2000 years before the Christian era. According to this doctrine there is a resemblance either between a plant and the cure of a disease, as preserved in the names "fever wort" and "boneset" or between the plant and the part of the body affected. Some of the 17th Century applications of this doctrine are amusing:

"Walnuts have the perfect signature of the head: the outer husk or green covering represents the pericranium... whereon the hair groweth, and therefore, salt made of those husks or barks is exceedingly good for wounds in the head. The inner woody shell hath the signature of the skull, and the little yellow skin or peel that covereth the kernel is like the thin scarf that envelops the brain and therefore...if the kernel be bruised and moystened with the quintessence of wine and laid upon the crown of the head it comforts the brain and head mightily."[1]

The irrational mixtures of many substances in one remedy reached a high point in the famous electuaries and theriaca of the middle ages. Some of these contained from 40 to 60 ingredients. No wonder that the most famous, as the Theriaca Andromachi, was believed to be a universal cure-all.

But even at these times there were violent protests against such shotgun mixtures. "The apothecaries are my enemies because I will not empty their boxes," cried Paracelsus.... "The physician's duty is to heal the sick, not enrich the apothecaries.... My recipes are simple and do not call for forty or fifty ingredients."

Some ancient customs were not so different from modern practice. The Chaldeans had a very practical method. They exposed a sick member of the household on a litter by the highway in the hope that some passerby might recognize the disease and recommend a cure. Compare the modern practice of advertising medicines along the highways in the hope that those who are ill may recognize the symptoms and purchase the remedy.

Even with pure chemical compounds of known activity we are not free from the fact that much of the benefit derived from their use may be due to the faith of the patient. In his recent book on the treatment of adrenal insufficiency Thorn warns that in using desoxycorticosterone as a screening test for adrenal insufficiency it is necessary to follow a period of drug injection with a period of injection of the vehicle alone in order to determine whether the improvement alleged by the patient can be attributed to the drug.[2]

* Presented before the AMERICAN PHARMACEUTICAL MANUFACTURERS ASSOCIATION'S Mid-Year Convention, November, 1949, New York, N. Y.

Just when the scientific study of drug action began it is difficult to say. Certainly prehistoric man knew that certain plants regularly produced untoward symptoms and others led only to a sense of comfortable distention. The effects of fermented drinks, both good and bad, are recorded in the Bible. The South American Indians knew that dipping their arrows in the juice of Strychinos toxifera made them much more effective.

Early Pharmacologists

But all of this is very different from the deliberate study of where and how the effect of a drug is produced. The earliest pharmacologists in the modern sense were probably Anton Stoerck (1731–1803) and Purkinje (1787–1869) who studied the effects of camphor, opium, belladonna, and turpentine on himself. Garrison calls Francois Magendie (1783–1855) the founder of modern pharmacology.[3] Magendie's work was carried on by Alexander Crum Brown and Thomas Richard Fraser, the latter being the first to investigate the relation between chemical constitution and physiological action.[4] Rudolf Buchheim was followed by his pupil Oswald Schmiedeberg, and Schmiedeberg in turn by his pupils, Hans Meyer, Cushny, and Abel. While this type of pharmacological investigation served a tremendous purpose in forming the basis for a rational therapeutics, and of eliminating, albeit slowly, the great mass of impotent nostrums from the pharmacopoeias, and less rapidly from the apothecary's shelf, it of necessity became sterile.

During all these centuries an untold number of substances were tried for any discoverable effect in changing the course of disease. This hit-and-miss type of testing still goes on, and occasionally, as with prontosil, turns up a diamond. But the substances tried out now are usually the results of the ingenuity of the synthetic chemists rather than of nature, and primary trials are conducted on animals or microorganisms rather than on man. Yet the basic philosophy of trial and error continues essentially unchanged—sulfonamides, antihistamines, antibiotics.

The discoveries in chemotherapy not only provided a number of highly useful and effective therapeutic agents, but shifted the pharmacological emphasis from the "site" of drug action to the inter-related chains of chemical reactions which constitute the dynamic equilibrium of the cell. This came at a time when physiology and biochemistry were also undergoing a revolution in their approach to the study of vital processes, a shift from gross observation of mass mechanical and chemical processes to the intimate life of the cell. Students of these disciplines became less interested in the daily excretion of creatinine than in the inter-relation of enzymes. This opened new fields and vistas for pharmacology and has apparently rescued it as a separate discipline of the medical sciences from the early death from sterility and dry rot which seemed inevitable a few years ago.

Biochemical Approach

At the present time there is much evidence that the action of many drugs and poisons is mediated through a direct or indirect effect on enzyme systems. This is not a new hypothesis, for Myrback made a similar suggestion in 1926.[5] Perhaps the example of greatest importance, at least historically, is physostigmine, which Loewi and Navratil showed specifically inhibited choline esterase.[6] It is of considerable practical importance that the rate of hydrolysis of choline esters can be altered by modifying the structure of the choline moiety or of the esterifying acid. But in the present state of knowledge there are many drugs, such as anesthetics, barbiturates, morphine, amphetamine, whose action cannot be related to any specific enzyme system. The biochemical approach, however, is bound to be fertile. The discovery of the action of BAL (dithiopropanol) in the treatment of arsenic (Lewisite) poisoning was the direct result of studies of the effect of this gas on tissues, and the discovery that it interfered with cellular life by combining with sulfhydral groups. It was then eminently logical to expect that a substance with sulfhydral groups might form a firmer compound with arsenic than the cellular components, and so serve as an antidote.

"The enzymic approach to the study of the mode of action of drugs is by no means limited to those compounds which affect mammalian tissues. The chemotherapy of infectious and parasitic diseases is based on the use of compounds which in suitable dosage have less effect on chemical reactions

essential to the well-being of the host than on those reactions requisite to the life or reproduction of invasive organisms."[7]

While the virtue of the original prontosil was found by the routine hit-and-miss trial of every conceivable compound, the development of the effective sulfonamide family depended first on a determination of the fate of prontosil in the body and then on the synthesis of related compounds in an effort to diminish mammalian toxicity while preserving antibacterial power. But curiosity as to the mode of action may well turn out to be more important in therapeutics than the industry of the synthetic chemists. Woods and Fildes suggested that the effect of the sulfonamides was due to their substituting for a structurally related compound essential for the life or reproduction of certain bacteria.[8] This "essential metabolite" appeared to be para-aminobenzoic acid. So, when it was found that animals infected with the rickettsia of typhus fever died more quickly when given sulfonamides than the controls, it was obvious to try para-aminobenzoic acid. Except for these steps in biochemical knowledge, the hit-and-miss trial of para-aminobenzoic acid in typhus fever probably would not have occurred for a hundred years.

New Concept in Pharmacology

This concept that interference with biological processes may result from the use of compounds structurally related to, but not utilizable in place of, substances essential for life or reproduction constitutes a new chapter in pharmacological thinking.

With laboratories equipped to probe the essential biochemical nature of cellular energy, and the organic chemists ready to furnish compounds which will reinforce, modify, or antagonize these processes, why is there still so much discrepancy between the promise of a new drug in the laboratory and its ultimate place in clinical medicine?

Both pharmacologists and clinicians deal with the same biological material. But the pharmacologist can control the age, sex, breeding, diet, and previous health of his experimental animals, while the clinician has to take what is offered in the office, clinic, or ward, and test subjects of unknown breeding which vary in nutritional state, age, and previous disease.

The pharmacologist, if he wants to, can run adequate control groups, but the influence on the lay mind of the reports of alleged virtues of a new drug in popular magazines makes it very difficult for the clinician to appraise a drug under controlled conditions. Of course, a good many thousand dollars worth will have been sold before the tumult and shouting dies.

Rate of Absorption Differs

There are some reasons for failure of a remedy to become established in the clinic in spite of laboratory promise which are worth reviewing. One of the most obvious is that absorption in man may be very different from the test animal, and moreover, varies from person to person and even in the same person from time to time. I remember vividly, years ago, attempting to digitalize a decompensated cardiac patient with tincture of digitalis. He was finally taking a dram three times a day without apparent effect. The tincture, apparently was impotent. But assay by the U. S. P. frog method, then official, showed that it was up to the manufacturer's claim. The patient was subsequently promptly digitalized by the usual amount of another preparation. I have also counted twenty 5-grain cascara tablets in the colon of a patient at autopsy, although tablets from the same bottle seemed to have produced the usual result in the majority of patients in the ward at that time. Of course, I suppose the results in these patients may have been psychic.

The virtue of sulfaguanidine in the treatment of intestinal infections was claimed to be due to its lack of absorption, and that consequently toxic symptoms would not be encountered. This is approximately true in the normal intestine. But when the gut is congested, inflamed, or ulcerated by dysentery or other infectious process, the absorption is greatly increased, so that blood levels may be obtained comparable to those encountered with other, more readily "absorbable" compounds.

Another disappointment to the manufacturer is the development of toxic symptoms of one kind or another with the general use of a drug which were not apparent either in animal experiments or preliminary clinical trial. Rodents cannot vomit. So the

absence of gastric symptoms in rats furnishes no assurance that these may not be prominent in man. That one species of animal may be more readily poisoned by a given amount of drug per Kg. than another is well known. But there are marked differences in individuals of the same species, even for a given age and sex. For instance, Dr. Levy, in our laboratory, was unable to establish a satisfactory LD_{50} for rats poisoned by parenteral injection of mercuric chloride until he used animals of the same inbred strain. Consequently, it takes extensive experience with the hybrid human species before the incidence of toxic manifestations can be determined. And to justify recommendation of a new drug, it takes a lot of cures to make up for one dead patient.

Many people died of agranulocytosis before its relation to amidopyrine was recognized. Since this experience physicians have been much more alert to the possibility of leucopenia from any compound containing the benzol ring. Since this toxic manifestation may come on suddently, after the patient has been taking the drug for months with apparent impunity, even its occasional occurrence diminishes the usefulness of a drug tremendously.

Skin Lesions

Another type of reaction which diminishes the value of a drug is the development of peculiar skin lesions (fixed drug eruptions) on long continued administration. Atabrine probably furnishes a good example. The effectiveness of atabrine as a malarial suppressive had been established before the war. The yellow color of the skin it produced was well known. This was at most an inconvenience. But the relation of the so-called atypical lichen planus to atabrine was obscure for a long time. What made the analysis more difficult was the fact that a patient with lichen planus who had been off atabrine for months could be given a week's course of the drug for an attack of malaria without any exacerbation of skin lesions. It was only when it was shown that it required an average of three months' administration to produce the lesions that the relationship became clear.[9] While the incidence of lichen planus was not great enough to negate the value of atabrine suppression from a military point of view, it made a large number of men awfully uncomfortable. One of the advantages of chloroquin was that in preliminary trials it produced no such skin lesions. Yet Alving found that administration of relatively large doses for 8 and 12 months gave such lesions in two individuals.[10] Whether it is better than atabrine in this respect can only be determined by an experience comparable to that in the last war.

Malaria furnishes another example in which the results of animal and human experience may not agree. A causal prophylactic, that is one that will "cure" malaria, must affect the parasites during their extra erythrocytic cycle. These extra erythrocytic forms are found in the cells of the reticulo-endothelial systems in avian malaria, while in monkeys and man they are in the liver cells. There is no reason why a drug should be concentrated equally well in endothelial and hepatic cells. The differences in prophylactic activity of antimalarials in avian and human malaria may be due to this fact or to differences in the metabolism of the parasites.[11]

Similarly there is apparently a significant difference in the metabolism of even closely related parasites. The oxidative metabolism of the filarial worm L. carinii is strikingly inhibited by certain cyanin dyes, so that infection with this parasite in cotton rats can be almost miraculously cured. The dyes are useless in human infection with W. bancrofti, partly due to toxic symptoms but apparently also due to differences in the metabolism of the parasite. For Hetrozan, which appears effective in W. bancrofti infections, has only minimal effects on L. carinii.[12]

Allergic Reactions

The usefulness of many drugs is diminished because of the relative frequency with which reactions classified as allergic develop on continued, and particularly repeated, administration. These can rarely be predicted by laboratory studies. The sulfonamides and barbiturates are well-known examples. It has been shown in both animals and man that nitrogen equilibrium can be maintained by intravenous injection of protein hydrolysates. Unfortunately a number of patients for whom this treatment would be most valuable develop

fever after 7 to 10 days, presumably as a result of the development of antibodies to the polypeptides in the hydrolysate. The incorporation of penicillin in an oil or wax menstruum to delay absorption is a bright idea, but since certain people are or become sensitive to the drug, it could be foretold that some of these would develop a severe, even necrotizing, reaction similar to the Arthus phenomenon where penicillin was injected in such a way that it was not rapidly absorbed.

The relative importance of enzyme systems, and the drugs that act on these systems, may vary in man and other animals. Certainly there is evidence that the importance of sympathetic innervation varies in different animals. In the rabbit, the sympathetic control of the renal circulation seems to be particularly prominent, so that alterations in renal blood flow and volume or glomerular filtrate are readily produced. In this animal, the xanthines usually produce a significant diuresis, and the combination of a xanthine with a mercurial produces a significantly greater effect than the mercurial alone. Such an effect does not occur, and cannot be expected in man and other animals where the xanthines alone are less effective.

In other instances, a drug may have the effects predicted from laboratory study, but the presence of additional effects, often unsuspected, cause disappointment. The drowsiness due to several antihistaminic drugs is an example. This is of little concern to the patient in bed with the hives, but is of great importance if he is going to drive an automobile.

Drugs have been man's constant companion from the Garden of Eden, or before, and faith in their effectiveness almost as natural to us as religion. The recent development of an understanding of drug action, and of the possibilities of designing new agents to modify physiological processes opens undreamed of possibilities. In these developments, the drug manufacturers have played no secondary role. Much of the future happiness of mankind may be in your hands. But I would remind you that "Life is short, and the Art long; the occasion fleeting, experiment fallacious, and judgment difficult."[13]

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Modern Treatment for Burns Increases Chances for Survival

Treatment for burns which has been developed in the last few years increases chances for survival and diminishes the danger of impairment, according to an article in the December, 1949, issue of *Hygeia*. The new methods were made possible by wartime advances in medical knowledge, especially that of blood and infection-fighting drugs, reports Red Cross worker Alma Gaines Ramsay of Arlington, Va.

New discoveries, coupled with greater accessibility to hospitals, rule out home treatment of severe burns. Household remedies often do more harm than good and it is recommended that a fire victim be wrapped in a clean sheet and rushed to the hospital.

In modern burn therapy, first attention is given to shock, the important factor being to provide prompt re-establishment of an adequate volume of circulating blood. Plasma or serum albumin are ideal fluids for this purpose because they are often more readily available than blood. Plasma, however, must be followed quickly by transfusion of whole blood.

The other step is to cover the damaged surface with petrolatum-impregnated gauze, to pile on eight to ten inches of surgical padding material and then to apply a snug elastic bandage. This dressing is left on from eight to 14 days, unless infection occurs. The burn is then attacked from the inside by use of penicillin and similar drugs and by massive transfusions of whole blood and blood fractions.

the public's health-- your first concern

HYPERTENSION

No. 3 in a Series

◆ ◆ ◆ ◆ ◆ ◆

HYPERTENSION, or high blood pressure, is today one of the most important and most common conditions affecting the heart. For people in middle age it has become the principal cause of heart trouble. While the underlying basis for the majority of cases of hypertension is still obscure, there is much that can be done by medical science to alleviate the symptoms and to eliminate the unnecessary strain and wear on an already overtaxed heart.

What is and what is not abnormal blood pressure depends upon the individual. What is high for some may be normal for others. Contrary to popular belief, there is little truth to the adage that an individual's pressure reading should be 100 plus his age.

Blood pressure in any individual can and does vary as much as 15 to 50 points daily, depending upon his emotional state and level of activity. For practical purposes, medical authorities agree that any pressure persistently above 150 millimeters in the systolic phase or 90 millimeters in the diastolic phase is excessive. Of the two, the more significant is the diastolic reading, for it indicates the resistance met by the heart during its resting phase.

The elevation in pressure is brought about by a narrowing of the passageway for the blood in the arterioles, resulting in the rise of resistance to the flow of blood. In some instances, such as certain diseases of the kidneys or a tumor of the adrenal gland, the pressure is a clearly demonstrated secondary factor, stemming from the diseased condition. In the vast majority of cases, however, there is no discoverable cause to explain the increased pressure. Doctors call this condition *primary* or *essential* hypertension.

In order to keep the blood flowing at a normal rate against increased resistance, the heart must perform extra work, as a result of which—like any muscle—it enlarges. This increased resistance, if not overcome or controlled, causes the heart and arteries to wear out prematurely. Cerebral thrombosis or hemorrhage, congestive heart failure or coronary thrombosis are frequently the end results of long, unabated pressure.

This long elevated pressure that denotes hypertension is merely a symptom—a physical finding—of the baffling underlying condition. Often, in the early stages, it is the only indication. There are many who go through life either unaware or untroubled by it. In other cases, however, as hypertension progresses there is an increase in symptoms. These later symptoms are the warning signals that hypertension has begun to affect important organs such as the heart, kidneys, and blood vessels.

Middle-aged patrons may come to the pharmacist with chronic complaints of *early morning headaches, dizziness and weakness, shortness of breath,* as well as *increased frequency of urination.* While these symptoms may be due to other factors—or may even prove of no significance—they may also be indicative of destructive changes occurring as a result of hypertension. It is important therefore that the pharmacist, as a source of reliable health information in the community, should unhesitatingly recommend that such persons obtain a thorough medical examination.

STABILIZATION OF RESORCINOL FOR TOPICAL PREPARATIONS*

by ALFRED HALPERN
and HOWARD A. GETZ†

In an attempt to find a substance that would stabilize the color of resorcinol, a number of antioxidants were studied in connection with preparations containing resorcinol. Ascorbic acid, α-tocopherol, sodium formaldehyde sulfoxolate and sodium metabisulfite, in the order named, were found most effective.

THE resorcinol color change on exposure to light and air is rather well known. While there has been no conclusive demonstration of any loss of activity due to the color change, many patients associate this phenomenon with deterioration of the product. The inconsistency of the development of the color, which might vary from one preparation to another, may also cause the patient to doubt the reliability of the compounder. Since the development of a color has been attributed to oxidative changes, it was deemed of interest to investigate the effect of several antioxidants on resorcinol-containing preparations in an attempt to prevent the formation of a color.

Experimental

The antioxidants studied were ascorbic acid, sodium formaldehyde sulfoxalate, sodium metabisulfite and α-tocopherol. Varying concentrations of these agents were mixed with ointment bases containing 5 per cent of resorcinol. Approximately 2 grams of the mixture were then spread on a glass plate and exposed to the air and light. To insure proper exposure of the test area, it was levigated every six hours. The test plates were examined periodically for color change and compared with a control preparation without the antioxidant. The results are reported in Table I.

The test agents were also added to lotions and fluid-emulsions containing 5 per cent resorcinol. Thirty cc. of these mixtures were stored in flint glass bottles, exposed to the light. The containers were opened to the air and shaken thoroughly several times each day and examined for a color change. (See Table II.)

Since it was noted that *p*H influenced the formation of the color, the aqueous phase of the water-containing preparations was buffered to different *p*H levels, then treated in the manner described above. The effect of *p*H on the development of a color is noted in Table III. (See Page 26.)

To further investigate the effects of the antioxidants on the stability of resorcinol, several typical prescriptions were obtained from the current files of a local pharmacy and these were prepared, both with and without the antioxidants. The preparations were stored in the appropriate container, on the open shelf in diffused light. A portion of the contents was removed, according to the directions on the prescription, to simulate their actual use. The preparations were examined periodically for the development of a color. The following prescriptions were studied:

℞ No. 1

Sulfur, ppt.	gr. xv
Resorcin	gr. x
Aquaphor, *q. s.*	℥ i

Sig. Apply to scalp three times each week.

* From the George A. Kelly, Sr. Pharmacy, Duquesne University, School of Pharmacy, Pittsburgh, Pa. Presented before the Section on Practical Pharmacy, AMERICAN PHARMACEUTICAL ASSOCIATION, Jacksonville, Fla., April, 1949.

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TABLE I

The Effect of Antioxidants on the Stability of Resorcinol in Ointment Bases[a]

Antioxidant	Per Cent	Stabilizing Period in Hours — Yellow Petrolatum	Wool Fat	White Ointment[b]	Hydrophilic Ointment[b]	Cold Cream[b]	Vanishing Cream[c]
Control	..	10	8	8	5	6	5
Ascorbic Acid	0.01	12	11	11	7	9	7
	0.05	22	22	29	29	24	28
	0.1	34	36	30	38	36	40
	0.3	56	58	56	60	60	50
	0.5	72	74	74	80	78	66
	0.7	96	96	96	90	96	80
	1.4	148	148	148	144	140	108
α-Tocopherol	0.01	15	14	14	6	14	6
	0.05	19	18	19	8	21	8
	0.1	50	53	56	21	52	20
	0.3	58	58	64	36	64	30
	0.5	72	70	70	56	70	50
	0.7	128	128	136	112	120	76
	1.0	144	144	140	140	140	94
Sodium Metabisulfite	0.05	10	8	8	10	10	10
	0.1	12	10	10	14	10	16
	0.3	14	16	16	28	16	28
	0.5	14	18	18	26	24	28
	0.7	24	24	24	56	30	56
	1.0	40	38	40	62	48	64
Sodium Formaldehyde Sulfoxalate	0.05	12	10	10	16	8	16
	0.1	24	26	24	22	12	24
	0.5	20	20	18	36	30	36
	1.0	46	48	46	72	66	72

[a] 5% resorcinol was added to the indicated bases. [b] Prepared according to the U. S. P. XIII. [c] Prepared according to the Pharmaceutical Recipe Book, 3rd Edition, page 380.

℞ No. 2

Zinc Oxide	ʒ ii
Phenol	gr. v
Resorcin	gr. xv
Olive Oil	ʒ i
Lime Water	ʒ i

Sig. Apply locally each night.

℞ No. 3

Salicylic Acid, Sulfur, Resorcinol, *aa*	ʒ i
Hydrophilic Ointment, *q. s.*	ʒ ii

Sig. Apply t.i.d.

℞ No. 4

Boric Acid	ʒ i
Salicylic Acid	ʒ ss
Resorcinol	ʒ ss
Cold Cream, *q. s.*	ʒ ii

Sig. Apply b.i.d.

℞ No. 5

Resorcinol	10
Zinc Oxide	25
Sulfur	5
Starch	25
Liquid Petrolatum, *q. s.*	100

Sig. Apply morning and night.

Ascorbic acid prevented the color formation in all of the above prescriptions. The ascorbic acid cracked the emulsion of ℞ No. 2 and it was necessary to add 5 per cent of bentonite to stabilize the preparation. Five-tenths per cent of the agent was found to be sufficient for preparations that were to be used within one week and 1.0 per cent stabilized the preparations for more than one month.

Sodium formaldehyde sulfoxalate and sodium metabisulfite stabilized ℞ No. 2. A slight color developed at the end of three weeks with ℞ No. 1 and after six days with ℞ No. 5. Both of these agents were used in one per cent concentrations. The acids of ℞ No. 3 and ℞ No. 4 were incompatible with the alkaline antioxidants and both of these preparations developed an objectionable odor within three to four hours.

It appears that the order of stabilizing activity for the compounds tested was ascorbic acid, α-tocopherol, sodium formaldehyde sulfoxalate and sodium metabisulfite. In the absence of an oil phase, the aqueous

TABLE II

The Effect of Antioxidants on the Stability of Resorcinol[a] in Fluid Preparations

Antioxidant	Per Cent	Stabilizing Period in Hours — Calamine Lotion	White Lotion	Fld. Emul. No. 1[b]	Fld. Emul. No. 2[c]
Control	..	15	4	4	10
Ascorbic acid	0.01	20	6	6[d]	12
	0.05	30	10	12[d]	20
	0.1	36	15	14[d]	26
	0.5	48	24	22[d]	36
	1.0	60	36	30[d]	54
Sodium Metabisulfite	0.01	24	10	[e]	18
	0.05	30	15	[e]	24
	0.1	40	22	[e]	36
	0.5	56	30	[e]	48
	1.0	72	46	[e]	78
Sodium Formaldehyde Sulfoxalate	0.01	26	10	[e]	20
	0.05	30	12	[e]	26
	0.1	44	24	[e]	40
	0.5	60	40	[e]	56
	1.0	80	66	[e]	72
α-Tocopherol	0.05	18	6	8	8
	0.1	18	8	20	26
	0.5	20	10	32	46
	1.0	22	10	50	62

[a] The preparations all contained 5% resorcinol. [b] Olive Oil, 1 part; Lime Water, 1 part. [c] Wool Fat, 27.5; Stearic Acid, 5; Triethanolamine, 1.6; Rose Water, *q. s.* to 100. [d] Incompatible with antioxidant, 5% bentonite added to stabilize emulsion. [e] Incompatible with antioxidant.

TABLE III

The Effect of *p*H on the Stability of Resorcinol

% Concentration of Antioxidant	Stabilizing Period in Hours											
	*p*H 3		*p*H 5		*p*H 7		*p*H 8		*p*H 9		*p*H 10	
	0.5	1.0	0.5	1.0	0.5	1.0	0.5	1.0	0.5	1.0	0.5	1.0
Ascorbic Acid												
Hydrophilic Ointment	..	....	74	140	76	142	70	130	56	108	43	84
Cold Cream	70	138	62	110	60	110	74	100	48	90	36	66
Vanishing Cream	..	....	..	....	68	110	60	98	54	90	40	60
Calamine Lotion	58	90	56	90	60	105	52	88	46	80	38	56
White Lotion	..	....	..	....	58	100	54	95	44	78	32	50
Fld. Emul. No. 1	..	....	..	....	..	....	42	70	35	60	26	46
Fld. Emul. No. 2	56	96	56	94	54	94	50	86	46	80	34	64
Sodium Metabisulfite												
Hydrophilic Ointment	..	....	..	....	28	60	26	58	22	40	18	28
Cold Cream	..	....	..	....	24	56	22	46	20	34	16	28
Vanishing Cream	..	....	..	....	..	....	24	50	20	46	14	30
Calamine Lotion	..	....	..	....	..	....	22	38	20	38	18	30
White Lotion	..	....	..	....	..	....	24	46	20	38	16	26
Fld. Emul. No. 2	..	....	..	....	..	....	26	46	21	36	18	32
Sodium Formaldehyde Sulfoxalate												
Hydrophilic Ointment	..	....	..	....	..	....	30	68	26	54	20	44
Cold Cream	..	....	..	....	..	....	26	56	20	44	18	36
Vanishing Cream	..	....	..	....	..	....	38	68	26	56	18	38
Calamine Lotion	..	....	..	....	..	....	36	68	26	58	20	36
White Lotion	..	....	..	....	..	....	34	60	30	58	22	44
Fld. Emul. No. 2	..	....	..	....	..	....	36	60	30	56	20	36
α-Tocopherol												
Hydrophilic Ointment	..	....	58	110	58	112	54	100	48	96	32	74
Cold Cream	76	148	70	140	56	114	56	110	48	100	38	88
Vanishing Cream	..	....	..	....	56	98	50	90	42	86	34	70
Calamine Lotion	..	....	16	18	16	16	14	14	10	12	8	8
White Lotion	..	....	..	....	..	....	8	8	6	8	6	6
Fld. Emul. No.2	..	....	..	....	44	96	40	88	36	78	28	66

insolubility of α-tocopherol renders this agent ineffective. The alkalinity of sodium formaldehyde sulfoxalate and sodium metabisulfite detracts markedly from their properties as stabilizing agents. It is of interest to note that the presence of water accelerates the color formation. The preferential solubility of the ascorbic acid in the aqueous phase and its acid properties probably account for its superior properties with this type of preparations. The view that an alkaline *p*H enhances the color formation is rather well founded.

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PLAN NOW TO ATTEND

1950 A. Ph. A. Convention

APRIL 30 TO MAY 5

HOTEL TRAYMORE ATLANTIC CITY, N. J.

1949 REMINGTON MEDAL ADDRESS

a condensation

by **ERNEST LITTLE***

As I LOOK back over thirty-one years, which is the length of time I have been associated with pharmacy, I find much which should act as a source of encouragement, as we face the problems of tomorrow.

In the field of pharmaceutical education progress has been rapid and profound. Three decades ago our colleges of pharmacy had, generally speaking, no entrance requirements and very low educational standards. Applicants with but two years of high school training, or even less, were admitted to our colleges in large numbers.

The curricula offered constituted, by and large, part-time two year courses. There were far too many part-time teachers on our teaching staffs. Laboratory work was sadly deficient. Indeed our whole educational program was in need of broadening and strengthening.

Three-Year Course Abolished

You know how splendidly such improvements have been made. We went to the minimum three year course in 1925 and the four year course in 1932. The so-called degree of Ph. G. (Pharmacy Graduate) has been abolished and the university degree of Bachelor of Science substituted.

Entrance requirements have been increased until, today, they compare favorably with the entrance requirements of other university colleges.

Both the American Association of Colleges of Pharmacy and the American Council on Pharmaceutical Education are actively studying and seriously considering a six year program. We may rest assured that pharmaceutical education will not remain static but will continue to grow and develop as the needs of the profession dictate.

College prerequisite requirements are now in effect in all of the states of the union except one. Would that the citizens of that neighboring state could recapture some of the imagination and pioneering spirit of their ancestors.

Another encouraging circumstance in the field of pharmaceutical education is our rapidly developing graduate programs. Pharmaceutical industry and our colleges of pharmacy have need for many more Ph. D.'s., who have done their undergraduate work in pharmacy, than are now available.

One of the many fine contributions which the American Foundation for Pharmaceutical Education is making to our profession is its support and encouragement of graduate work in colleges of pharmacy which are prepared to carry on graduate programs of high quality. The Foundation is spending in excess of $100,000 a year on graduate fellowships alone at this time.

It would seem that if the Foundation did no more than it is now doing in the field of graduate work, its continued existence would be fully justified. I sincerely hope that all of us, in all branches of the profession, will become increasingly interested in the American Foundation for Pharmaceutical Education and that increased financial support will be forthcoming from year to year. It represents one of the most fundamental and important developments within the framework of our profession during the past decade.

Twenty years ago we had no regularly organized accrediting agency operating in the field of pharmaceutical education. It is true that the American Association of Colleges of Pharmacy had performed such functions since the turn of the century in a most admirable manner, but the A. A. C. P. was never intended to be and never considered itself primarily an accrediting agency.

Council on Pharmaceutical Education

Today we have the American Council on Pharmaceutical Education, made up of representatives of the American Pharmaceutical Association, the National Association of Boards of Pharmacy, the American Association of Colleges of Pharmacy and the American Council on Education, operating in an efficient and considerate manner. This agency merits and should have our sympathetic understanding as it continues its good work in behalf of pharmacy.

We have recently witnessed the completion of a survey of American Pharmacy in all of its various ramifications. This survey was sponsored by the American Council on Education and directed by an unusually capable leader, Dr. Edward C. Elliott.

* Delivered at the Remington Medal Presentation Dinner on December 6, 1949, in Hotel New Yorker, New York, N. Y. Dr. Little is the twenty-seventh recipient of the award which is given annually by the New York Branch of the A. Ph. A.

The Findings and Recommendations of this group should by now be known to all of us. I sincerely hope that we shall continue to give them general study, and exceedingly detailed study as they apply to the particular branch of pharmacy in which we are engaged.

This survey work has proven expensive. It has cost the American Foundation for Pharmaceutical Education in the neighborhood of $200,000. The expenditure of even such a sizable sum can be justified many times over if we will all play our full parts in helping to make its recommendations—realities.

It is up to Us

It is up to us. Dr. Elliott can do little more. He is now diligently working with the American Council on Pharmaceutical Education helping to implement the recommendations of the Survey as they pertain to the important work on accreditation.

We must take up the work from here on. Dr. Elliott is available for consultation and advice but, as is so frequently the case, he can help only those who help themselves. It occurs to me that a similar comment has been made about an even greater personality than Dr. Elliott.

It would seem, from the above presentation of some of our more recent accomplishments, that pharmacy is about to go forward with a program more comprehensive and constructive than ever before.

Such should be the case. The necessary agencies are organized and in operation manned by capable staffs. Our recent survey has very clearly indicated the paths we should follows.

What then stands in the way of progress? Nothing, I should say—nothing, unless it be a lack of unity, a lack of solidarity, a lack of singleminded determination, which are prerequisites to success in any field of endeavor. It is in these respects that we still have much progress to make. It is to this thought that I wish to direct my remarks for the next few minutes.

It is always dangerous to engage in superlatives, but for the sake of emphasis I shall say that in my judgment pharmacy's greatest need today is that we, its practitioners, should be freed from petty prejudices which keep us apart one from the other, weaken the very foundation of our profession and prevent us from making the over-all progress which should be ours.

Although I have tried to be generally active in the field of pharmacy, I am primarily an A. A. C. P. man and it is there that my deepest interests lie. We are justifiably proud of the fine progress which has been made in the training and education of the practitioners of pharmacy during the past quarter of a century. Still, I would be false if I did not confess that we educators have been as narrow and possibly more provincial than the representatives of any other branch of our profession. We at times display unjustifiable suspicion of the motives and good intent of our co-workers in the manufacturing field, in the field of wholesale distribution and, to a lesser extent, in retail pharmacy as well. Our actions at times might even indicate that we are inclined to feel that we have more or less of a corner on virtue, one of the most dangerous attitudes which can threaten any man.

To those of you who feel that I may have been a little too severe with us educators, may I add that it seems appropriate, even when engaging in strictly constructive criticism, to start with self analysis.

We educators sometimes assume a "holier than thou" attitude which is quite unjustified and certainly not conducive to progress in our profession. I hope that in the days ahead we shall strive, without the sacrifice of a single principle, to see the other fellow's point of view and to work more cooperatively with him.

Well, having antagonized my own colleagues in the field of pharmaceutical education, may I spend a few minutes alienating the affection of my friends in the fields of pharmaceutical manufacturing and wholesale distribution. For no logical reason except to save time, I shall consider them jointly.

Progress in Manufacturing

We are all proud of the progress which has been made in the field of pharmaceutical manufacturing. We need to think only of the vitamins, more recently B_{12}, the sulfa drugs, the whole field of antibiotics, antihistaminic drugs and more recently cortisone, which may become the wonder of them all. A mere glimpse of these and many other equally profound accomplishments should cause us to stand in awe of the really profound achievements of our co-workers in the manufacturing field.

Yet these men do not always show an awareness of the need of cooperation in the pharmaceutical family which we would like to see. It is true that pharmaceutical industry has contributed several million dollars to the American Foundation for Pharmaceutical Education. This is something for us educators to be deeply appreciative of, but not something for pharmaceutical manufacturers to be unduly proud of.

As we review the potentialities of help from the manufacturing field for an agency as worthy and as obviously needed as the A. F. P. E., we are appalled by the inadequacy of the contribution so far received. This may be due in part to the fact that the Foundation has not been sold to prospective donors as it should have been—I wonder, however, if at least to some extent, it does not also reflect an inadequate appreciation of the essential need of better cooperation and mutual help within the ranks of our profession.

There has been a discouraging decrease in contributions to the Foundation during the past several years. It is hoped that individuals and corporations in a position to do so, will think in terms of greater, much greater contributions than ever before. Such action could be amply justified from strictly

selfish and hard-headed business considerations. I have too much confidence in the vision and in the enlightened generosity of our men of wealth in the profession of pharmacy to make any such uncomplimentary appeal.

Well, how about our retail pharmacists? Retail pharmacists have, by and large, shown an encouraging desire to cooperate, as best they can, in the upbuilding of our profession. They would be among the first, however, to confess that they have not done all that might reasonably be expected of them.

Seldom, during the twenty years that I was Dean of the New Jersey College of Pharmacy, did I talk with a retail pharmacist who did not profess to know more about how the New Jersey College of Pharmacy should be run than did the men then responsible for its administration. Possibly they were correct, but I could have told them how their stores could be greatly improved, sometimes involving nothing more profound than a more frequent use of the floor brush and dusting cloth.

More Tolerance Needed

The point is, they were making the mistake which you, and I too, frequently make. They were being too critical of their colleagues while overlooking or even being unaware of their own shortcomings. Therein lies one of the big weaknesses of our profession, and one of our greatest challenges. Let us be more critical of ourselves, a little more tolerant of the other fellow, and much more determined to cooperate with him. That is the thought which I leave with you tonight. Will you consider it well? No branch of our profession can be stronger than pharmacy's weakest link. May we keep the over-all picture, the over-all needs of our profession constantly before us, and develop a feeling of mutual confidence, an "Esprit de Corps" never before achieved.

I appeal to my friends, in all branches of the profession represented here tonight, to be generous in the interpretation of my remarks and try to understand the spirit which prompted them. I have made no attempt to give a scholarly address. I have tried to be neither complimentary nor critical. I have tried only to be helpful. One cannot always do that without running the risk of being misunderstood. Knowing you as I do, I am quite willing to take that chance.

"Wide Walls"

I would like to conclude with a somewhat homely verse, written anonymously. It may not qualify as classical literature, but it appeals to me as being both stimulating and worthwhile. It is called "Wide Walls" and is as follows:

Give me wide walls to build my house of life—
The north shall be of love, against the winds of fate,
The south of tolerance, that I may outreach hate,
The east of faith that rises clear and new each day,
The west of hope, that e'en dies a glorious way.
The threshold 'neath my feet shall be humility;
The roof—the very sky itself—infinity.
Give me wide walls to build my house of life.

May the walls of our house of pharmacy be built wide and strong. Wide enough to include all that is best from all sectors of our diversified profession, strong enough to resist undermining influences which beset it. From such a structure may we go forward together with a determination and a singleness of purpose which will result in accomplishments greater than ever before achieved, and which will make pharmacy's future worthy of its past.

Rickettsialpox—A New Disease

During the warm seasons, doctors throughout the United States should be alerted to a recently recognized disease, rickettsialpox, according to Dr. Leslie Paxton Barker of St. Luke's Hospital, New York.

The first cases of rickettsialpox were discovered in the Queens section of New York in 1946. Since then about 150 cases a year, from Queens and three other boroughs of the city, have been reported to the New York Department of Health. More than 30 cases of rickettsialpox were observed from April to September in 1947 and 1948 at the skin clinic of St. Luke's Hospital. No deaths have been reported from the disease.

Rickettsialpox is harbored by the common house mouse and is transferred to human beings by the rodent mite which infests the mice. The bite of the mite produces an initial lesion resembling a pimple or boil. Other symptoms of rickettsialpox are fever, sweating, headache and a rash, Dr. Barker says.—*J. Am. Med. Assoc.*, **141**: 1119(1949).

NEWCASTLE disease of poultry can be quickly and easily identified by a new, simple blood test that eliminates costly laboratory analysis. The disease is caused by a virus, is highly contagious, and causes death and heavy egg production loss. The new test can be performed on the farm by the veterinarian, without the necessity of carrying samples to the laboratory. The technique was developed by Drs. S. L. Zargar and B. S. Pomeroy at the University of Minnesota [*J. Am. Vet. Med. Assoc.*, **115**, 354(1949)].

SURVEY FINDINGS ANALYZED

. . . a review of the findings and recommendations of the Pharmaceutical Survey for the practicing pharmacist . . . . . .

THE TEACHING STAFFS

THE future of pharmacy depends largely upon its ability now and throughout the years to encourage an adequate number of highly trained men and women of character and greatness to join the ranks of the teachers of pharmacy. It is the teachers who, for the most part, determine what the students of pharmacy learn, who guide them in the development of professional attitudes, and who build the foundation upon which pharmacists establish their postgraduate ideals of service. It is the teachers who do much of the creative work in pharmacy. It is from the teachers of pharmacy that the continued growth and development of the professional must come and to them that the practicing pharmacist must look for guidance in the performance of his professional duties.

The pharmaceutical survey, recognizing the importance of the teachers of pharmacy to the future of pharmacy, lays particular stress on this problem in Chapter III (The Teaching Staffs) of its findings and recommendations. This, the fourth in the JOURNAL's series of articles analyzing the findings and recommendations of the survey, deals with this problem.

What Is the Problem?

One of the greatest problems facing pharmacy today is that of providing ways and means for the professional and financial upgrading of its teaching staffs. Too many of its teachers lack the thorough scientific preparation that is essential if the training for the profession of pharmacy is to be maintained on a level comparable to other professions. In the majority of cases, teachers' salaries have been too low to attract and to afford a satisfactory career for men of superior ability and to meet the competition from industry. Records show that the median pay for full professors during 1947–48 was from $5,000–$5,499 annually with proportionately decreasing salaries for associate professors. The survey points out that approximately 45% of the pharmacy teachers of professorial rank have only the master's degree or less. Other evidence indicates that there is constant need for improvement in teaching techniques and the further training of many of those who teach.

Dr. Edward C. Elliott, the survey director, in describing his impressions of the teaching staffs after visiting scores of pharmacy classes, said: "Rarely did I see and hear a classroom performance, carried on by one who had a clearly planned job for the hour, who spoke clearly and simply, who displayed an appreciation of the students' difficulty of receiving and absorbing massive doses of purported facts. Too often the so-called lecture was a vocal mutilation of the material to be found in a standard textbook which the student himself could read more quickly and less painfully. It is the teacher who breathes life into the curriculum. Pharmacy today needs more teachers who know more than they teach, and who are aware that the superior teacher is a dramatic artist. Coming recently from the classroom of one of these dramatic artists, one of the students said to me: 'No one ever goes to sleep in this class.' Speaking frankly, I have witnessed too much sleeping sickness in the pharmaceutical classrooms."[1]

Aside from raising the standards of present teaching staffs, there is an insistent need for concerted effort to increase the supply of personally capable and scientifically equipped individuals for teaching service. Under present conditions too many part-time teachers are being utilized. Of the 65 accredited institutions surveyed in 1947–48, a total of 474 members of the teaching staffs were full-time and 278 served only on a part-time basis. Steps have been taken to fill the need for more full-time, thoroughly trained teachers. One of the moves in this direction is the program of graduate fellowships, now being implemented by the American Foundation for Pharmaceutical

Education, which presents constructive and far-reaching possibilities.

Graduate Fellowships

Approximately 100 graduate fellowships requiring an annual appropriation of around $100,000 are now being maintained by the American Foundation for Pharmaceutical Education. The survey recommended that the American Foundation for Pharmaceutical Education include in its program for the encouragement of graduate study, provision for not less than 20 teaching fellowships, for the purpose of enabling individuals of ability and professional promise to become especially fitted for teaching service.

Teacher Training Centers

Another recommendation of the survey requested the American Foundation for Pharmaceutical Education in cooperation with the American Association of Colleges of Pharmacy to encourage certain of the accredited colleges and schools of pharmacy which are properly staffed and equipped, and advantageously located, to serve as centers for the preparation of teachers of pharmacy. The principal advantages of having a limited number of specially equipped schools to prepare individuals to teach pharmacy, would be that a greater amount of specialization could be carried on, more graduate studies could be offered, and schools of this nature would be more likely to attract those best qualified to train prospective pharmacy teachers.

Teaching Personnel

Each of the accredited institutions has been requested by the survey to re-examine carefully its teaching staff problem, both as to present and future needs. The survey further recommended that a statement of these needs, defined as completely as may be possible, be transmitted each year to some designated center such as the American Council on Pharmaceutical Education. It is believed that these statements, assembled from all institutions, may serve as a measure and a guide, especially for those institutions and individuals engaged in graduate education. In other words, pharmacy must develop a systematic program designed to establish a continuous balance of supply of, and demand for, new teaching personnel. This is a manpower issue of the first order.

Selection of Deans

In view of the prime importance of the deanship of a college or school of pharmacy as the central source for professional and personal leadership, the survey recommended that responsible administrative authorities consult fully and widely with those familiar with pharmaceutical personnel before making appointments to this position. The significance of this recommendation is obvious. The deans of the colleges and schools of pharmacy hire most of the teaching personnel, exercise a great amount of authority in establishing and maintaining salary classifications, have much to say about the pharmaceutical curriculum and the methods of teaching to be employed, and otherwise exert great influence on the overall conduct of the school or college. Therefore, because of the important position occupied by the dean, only men of outstanding professional achievements and those possessing a high degree of professional leadership should be chosen for this position.

Summer Seminars for Teachers

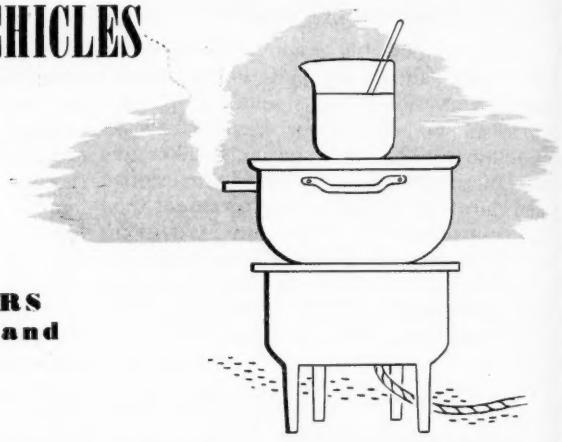
To assist members of the teaching staffs and graduate students to keep pace with progressive methods of pharmaceutical teaching, the first of a contemplated series of national seminars was held last summer at the University of Wisconsin School of Pharmacy. The seminar was the outgrowth of a survey recommendation to the American Association of Colleges of Pharmacy and the American Foundation for Pharmaceutical Education. Additional seminars are planned as annual events.

Undergraduates for Teacher Training

Another recommendation designed to encourage qualified undergraduate students to become teachers of pharmacy is contained in a survey recommendation to schools and colleges of pharmacy. These institutions are urged to give special attention to undergraduate students with personality, scientific ability and interest in the profession, and to encourage such students to proceed

(Continued on Page 49)

FORMULATION and PRACTICAL APPLICATIONS of CARBOWAX VEHICLES



by **DONALD B. MEYERS**
M. V. NADKARNI and
LOUIS C. ZOPF*

DURING the last few years the concept of an ointment base has undergone a major change. For centuries, the word "ointment" implied a semisolid product containing active medicaments uniformly distributed in a greasy base such as fats and petrolatum. The idea of "greasiness" was thus inseparably associated with the word "ointment." The primary purpose of such pharmaceutical preparations is to treat skin diseases or to obtain absorption into the system by penetration.

With the advent of the liquid polyethylene glycols, the solid Carbowax† compounds and the development of synthetic emulsifying agents, the preparation of a wide variety of water-miscible and washable ointment bases was made possible. Because these washable bases have decided advantages over the traditional oleaginous type, there is an increasing tendency on the part of the dermatologists to prescribe the water-soluble bases as vehicles for cutaneous medicinal preparations.

The series of polyethylene glycols possess certain physical properties combined with chemical inertness which favor their use as ingredients in washable ointment bases. These glycols have the general formula $HOCH_2(CH_2OCH_2)_xCH_2OH$ and comprise a series of products that include both liquids and wax-like solids. Four liquid polyethylene glycols covering a range of average molecular weights of 200 to 600 are available. The higher polyethylene glycols, which are solid at ordinary temperatures and known under the trade name, Carbowax compounds, vary in molecular weight from about 1000 to 7000. Several products of various molecular weights are commercially obtainable. The Carbowax compounds differ in consistency from a soft petrolatum-like semisolid to hard flakes depending upon the molecular weight. The melting point also increases with molecular weight.

Soluble in Water

The outstanding feature of these compounds is their solubility in water, and this feature, combined with their inertness and ability to form an unctuous base, recommends them as major ingredients in washable vehicles. Previous to the development of these compounds, a combination of unctuousness and water solubility had not been available together in a single substance and consequently most of the "washable bases" produced were of an emulsion type.

McClelland and Bateman[1] reported that in contact with the skin these Carbowax compounds and polyethylene glycols are no more irritating than lanolin or petrolatum. Smyth,[2] *et al.*, have reported that none of the liquid polyethylene glycols produced any congestion or any other signs of irritation

* A contribution of the College of Pharmacy, the State University of Iowa, Iowa City. Presented before the Section on Practical Pharmacy, AMERICAN PHARMACEUTICAL ASSOCIATION, Jacksonville, Fla., April, 1949.
† Products of Carbide and Carbon Chemicals Corp., New York City.

when clipped areas on albino rats were kept moist with these glycols for 24 hours. A 90-day inunction application on rabbits' abdomens produced no irritation. On human skin, the effects of these glycols were found to be equivalent to cocoa butter and the irritation caused by these chemicals was not greater than materials commonly applied to the skin.

It has also been shown by the same investigators that large single doses could be fed to rats, guinea pigs, and rabbits without causing injury. In the rabbit's eye the congestion to the lid caused by a 50% aqueous solution of Carbowax 4000 was comparable to that caused by a 5% sodium chloride solution.

In studies conducted at the State University of Iowa, no evidence of irritation was found from a base containing 50% Carbowax when applied to either normal or diseased skin of 86 clinical dermatologic patients.

Hopkins[3] prepared a number of ointment bases using Carbowax compounds as ingredients and found them useful on fissured and denuded areas intolerant to most liquid preparations. He pointed out that Carbowax ointments bring dissolved chemicals in contact with the skin in known concentration rather than as droplets dispersed in an emulsion. He also stated that Carbowax bases do not have the macerating effect of fats and oil. It is our observation, however, that Hopkins' bases are comparatively unstable to heat. One of the bases (Base B) melts at body temperature so that it liquefies when applied to the skin.

Emulsion-type, Washable Base

Landon and Zopf[1] presented an early formula for an emulsion-type, washable ointment base containing Carbowax, which is stable at elevated temperature. The formula, however, consists of multiple ingredients and includes a strongly ionic agent, sodium lauryl sulfate, as an adjuvant emulsifying agent. It was observed that this base becomes harder on aging due to loss of water.

In making the present studies, efforts were directed toward the formulation and examination of simple, washable, and easily compoundable ointment bases which exhibit a maximum number of the following properties which are believed desirable in an ointment base:

1. Washability
2. A low index of irritation
3. Efficiency of releasing medicament at the site of application
4. Compatibility with common medicaments
5. Ease of preparation
6. Stability to heat

Formulations of Ointment Bases Containing Carbowax Compounds

Following are presented the formulas and methods of preparation of three Carbowax bases which appear to be the most applicable to general uses, together with notes on specific uses of each.

BASE I

Carbowax 4000 W	50 Gm.
Polyethylene glycol 400	50 Gm.

Warm the two ingredients together on a water bath to 70° C. Remove and stir until congealed.

Base I is a homogeneous, white, semisolid, similar to petrolatum in consistency and liquefies at 52° C. It is completely water soluble and non-staining to bed linens and clothing. Tests show that it remains relatively unchanged upon storage at room temperature for indefinite periods and can, therefore, be recommended as a stock vehicle.

When applied to definite areas of normal or diseased skin, Base I gave no evidence of irritation or other untoward effects during several weeks of clinical observations. Therefore, it is considered a safe vehicle for external application in the treatment of most types of dermatitis. In clinical experiments carried out in conjunction with the Department of Dermatology,* of the University of Iowa Hospitals, this base demonstrated greater absorption on medicinal agents than petrolatum, especially when the application was made to diseased areas. This indicates that care should be exercised in determining the concentration of medicament which is to be incorporated. It has been demonstrated that lower concentrations of antiseptic agents in this type of base are as effective as much higher concentrations of the same agent in oleaginous bases. The

* The authors gratefully acknowledge the cooperation of Dr. Robert G. Carney, Assistant Professor of Dermatology and Syphilology, State University of Iowa, in evaluating all clinical data.

quantitative determination of the relative activity of medicaments in the two types of vehicles is the basis of our present investigation.

Stability tests carried out at 40° C. for six weeks show that Base I is a satisfactory vehicle for medicinal agents such as sulfur, phenol, ammoniated mercury, mercuric oxide, zephiran chloride (dissolved in 1 cc. of water per 100 Gm. of base), ichthammol, boric acid, tannic acid, balsam of Peru, resorcinol, or benzocaine when employed in the same concentrations as present in the official ointments. It is usually desirable and in some cases necessary to reduce the concentration of active ingredients when dispensed in a water-soluble vehicle.

Sulfa Drugs Compatible with Base I

The sulfa drugs also are compatible with this base though frequently a yellow coloration develops due to a trace of aldehydes present in the Carbowax compounds. Demonstrations by the agar cup method show that this coloration in no way impaired the bactericidal activity of the ointments.

Base I is miscible with water and therefore forms a suitable vehicle for the incorporation of solutions of medicinal substances. However, the high solubility of the base precludes the addition of aqueous solutions in excess of 3 per cent of the total formula. It is therefore recommended that Base II (presented below) be employed as a vehicle when it is desirable to incorporate larger amounts of aqueous or alcoholic preparations. Base II is also a superior vehicle for the incorporation of salicylic acid, its salts or esters in concentrations exceeding 3 per cent. We have found that the inclusion of a small percentage of cetyl or stearyl alcohol tends to inhibit the solubilizing effect of water, alcohol, or the salicylates on Carbowax-polyethylene glycol mixtures. The following is a representative formula of this type:

BASE II

Carbowax 4000 W	47.5 Gm.
Polyethylene glycol 400	47.5 Gm.
Cetyl alcohol	5.0 Gm.

Warm the ingredients together on a water bath to 70° C. Remove and stir until congealed.

Base II is a white homogeneous semisolid, more firm than Base I but possessing a better slip when applied to the skin. It is especially recommended as a vehicle for solutions or for salicylic acid and its derivatives. It is possible to incorporate water or aqueous solutions to the extent of 10% or alcoholic solutions not exceeding 5% of the total formula. Ointments containing 6% of salicylic acid softened but did not separate after prolonged storage at 37° C.

Base II may also be employed as a vehicle for such substances as zinc oxide, sulfur, etc., if the powders are first triturated into a paste with a small amount of glycerin, propylene glycol, or polyethylene glycol 400. Introduction of these powders directly into the base tends to produce a finished product which is too firm for smooth application.

The formulas of Base I and Base II represent anhydrous vehicles composed of mechanical mixtures of inert substances of suitable consistency. It is sometimes desirable that water be included in the vehicle for purposes of solubilizing certain medicaments (*e.g.*, phenacaine hydrochloride).

Heat-Stable Ointment Base

Base III represents a typical formula of a heat-stable Carbowax ointment base of the emulsion type.

BASE III
(*hydrous*)

Carbowax	50 Gm.
Polyethylene glycol 400	40 Gm.
Span 40*	1 Gm.
Water	9 Gm.

Warm the Span, Carbowax and the glycol together on a water bath to 70° C. and add the water heated to the same temperature. Stir until congealed.

This hydrous base is a glossy, white semisolid, which has better cosmetic appearance than the anhydrous bases. It will withstand temperatures of 42° C. and gives no indication of appreciable water loss when allowed to stand at room temperature in an open container for several weeks. It is compatible with most of the common therapeutic agents used in ointments such as zinc oxide, sulfur, coal tar, balsam of Peru, salicylic acid (6% or less), ammoniated mercury, ichthammol, phenol, etc. Its stability is

* Product of the Atlas Powder Co., Wilmington, Del.

not markedly impaired by the addition of aqueous solutions up to 10% of the total weight of the product.

The consistency of this base may be altered by changing the Carbowax-polyethylene glycol ratio. For example, if the 50:40 ratio represented in the formula is changed to a 56:34, the resulting product is more firm and consequently tolerates the addition of a larger quantity of liquid medicament or medicinal solutions. On the other hand, a vehicle less firm in consistency and particularly suitable for the incorporation of insoluble powders can be prepared by increasing the proportion of polyethylene glycol with a corresponding reduction of the Carbowax.

Span 40 (sorbitan monopalmitate) which appears in this formula as an emulsifying agent is a non-ionic, surface-active agent, and hence has a low index of sensitization. It may be replaced by an equal amount of sodium lauryl sulfate, Tergitol No. 7 or Aerosol OT, but it must be remembered that these latter agents are strongly ionic in character and may prove to be more irritating.

Methods of Incorporation of Therapeutic Agent Into Carbowax Bases

In general, the methods of incorporation of medicinal substances with the Carbowax bases do not differ from that of standard pharmaceutical techniques employed in the preparation of ointments.

If the agent to be added is a bulky powder it is advisable to levigate it with a small amount of polyethylene glycol 400, glycerin, or propylene glycol, before incorporation with the vehicle. These ointments can be satisfactorily prepared either on a slab or in a mortar. Coal tar, ichthammol, balsam of Peru, and similar products which require special treatment for incorporation into oleaginous bases can be directly combined with these vehicles. In the case of water-soluble ingredients, if Base III is the preferred vehicle such ingredients may be added by trituration after the base has congealed. Aqueous and alcoholic solutions being miscible with the three bases are readily incorporated by trituration.

Incompatibilities

The majority of therapeutic agents commonly used in ointment form are compatible with these bases. The sulfa drugs, chrysarobin and the combination of ammoniated mercury and salicylic acid in Carbowax vehicles produce gradual discoloration upon standing; however, so far as it has been possible to determine, this does not alter the therapeutic efficiency of the ointments.

The physical softening of Carbowax bases upon the addition of the salicylates has already been discussed. In view of the instability of penicillin in washable and water-containing bases as reported by Cutler[5] and others, it is recommended that where a non-oleaginous vehicle is indicated for the external application of penicillin, the anhydrous bases should be employed and the ointment extemporaneously prepared, in amounts which will be used within a reasonable length of time. The patient should be instructed to store the ointment in a refrigerator.

Even as petrolatum required years to replace the natural fats and oils, so it is expected time only will prove the efficacy of the non-oleaginous vehicle. It is neither expected nor anticipated that all forms of dermatitis will be treated with non-oleaginous vehicles, but it is fairly certain that efficiency, comfort to the patient, and esthetic qualitites are enhanced in the bases reported.

Conclusion

1. The formulas of three heat-stable, highly compatible ointment bases containing Carbowax compounds have been presented.
2. Applications and limitations of bases are indicated.
3. Methods of incorporation of medicinal agents have been outlined.

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WATER-IN-OIL EMULSIFYING AGENTS

The Influence of W/O Emulsifying Agents on the Loss of Water from Some Emulsified Ointment Bases of the O/W Type

By E. L. CATALINE, M. B. COOK* and S. F. JEFFRIES†*

UPON exposure to the air, washable ointment bases generally lose a considerable portion of the water which makes up the external phase of such preparations. This loss is accompanied by decided changes in properties. The preparations usually harden, cracks appear on the surface and washability decreases or disappears completely. The dehydrated products are virtually useless for therapeutic purposes.

Sometime ago, S. F. Jeffries found that the addition of relatively small quantities of cholesterol or cetyl alcohol and their esters to certain washable ointment bases resulted in a material decrease in the amount of water lost when these preparations were exposed to the air. In view of the practical possibilities of this finding, it seemed desirable to study the effects of such additions to a number of typical, washable ointment bases.

Experimental

The bases selected for study included a stearate-base vanishing cream, two bases containing sodium lauryl sulfate as emulsifying agent and two in which the emulsion was promoted by glyceryl monostearate. In addition, two modifications of the stearate-base vanishing cream base were studied; one of these contained 5% of white petrolatum while 20% of white petrolatum was present in the other.

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† Research Department, Pitman-Moore Co., Indianapolis, Ind. Presented before the Section on Practical Pharmacy, AMERICAN PHARMACEUTICAL ASSOCIATION, Jacksonville, Fla., April, 1949.

BASE I. STEARATE-BASE VANISHING CREAM

Stearic Acid, U. S. P.	20 Gm.
Potassium Hydroxide	1 Gm.
Glycerin	6 Gm.
Water	73 Gm.
	100 Gm.

The stearic acid was heated to 70°. The potassium hydroxide and glycerin were dissolved in the water and the solution, heated to 70°, was slowly added to the stearic acid with mechanical stirring. The emulsion was stirred until it had cooled nearly to room temperature.

BASE II. STEARATE-BASE VANISHING CREAM WITH 5 GM. OF WHITE PETROLATUM

Stearic Acid, U. S. P.	20 Gm.
Potassium Hydroxide	1 Gm.
Glycerin	6 Gm.
White Petrolatum	5 Gm.
Water	68 Gm.
	100 Gm.

BASE III. STEARATE-BASE VANISHING CREAM WITH 20 GM. OF WHITE PETROLATUM

Stearic Acid, U. S. P.	20 Gm.
Potassium Hydroxide	1 Gm.
Glycerin	6 Gm.
White Petrolatum	20 Gm.
Water	53 Gm.
	100 Gm.

Bases II and III were prepared as outlined above, the white petrolatum being added to the oil phase.

BASE IV. GIBSON BASE[1]

Duponol C	1 Gm
Cetyl Alcohol	16 Gm.
White Petrolatum	40 Gm.
Water	43 Gm.
	100 Gm.

The Duponol C was dissolved in the water and the solution was heated to 70°. The cetyl alcohol and white petrolatum were mixed, the mixture heated to 70° and added

to the aqueous phase with mechanical stirring. The stirring was continued until the product had cooled nearly to room temperature.

BASE V. BEELER BASE[2]

Duponol C	2 Gm.
Cetyl Alcohol	15 Gm.
White Wax	1 Gm.
Propylene Glycol	10 Gm.
Water	72 Gm.
	100 Gm.

The Duponol C was dissolved in the water and the solution was heated to 80°. The other ingredients were mixed, heated to 80° and slowly added to the aqueous phase with mechanical stirring. The mixture was maintained at 80° and stirring was continued for ten minutes. The emulsion was then removed from the bath in which it had been heated and it was stirred until it had congealed.

BASE VI. GLYCERYL MONOSTEARATE BASE[3]

Glyceryl Monostearate	12 Gm.
Light Liquid Petrolatum	20 Gm.
White Petrolatum	20 Gm.
Water	48 Gm.
	100 Gm.

The components were mixed and melted and the temperature was maintained at 70° and the mixture was stirred until the emulsion had formed. Stirring was continued until the mixture had congealed.

BASE VII. BENTONITE BASE[4]

Bentonite	2 Gm.
Glyceryl Monostearate	10 Gm.
Glycerin	25 Gm.
Water	63 Gm.
	100 Gm.

The bentonite was suspended in the water which had been warmed and the magma was allowed to stand over night. It was then heated to 70° and the glycerin and glyceryl monostearate, which had been mixed and heated to 70°, were slowly added to the magma with mechanical stirring. The product was stirred until it had cooled nearly to room temperature.

To each of these bases were added the alcohol-ester combinations listed below. (The letter designations used here are employed throughout this paper for convenience in referring to the appropriate bases.)

Base Designations

A. Plain Base. (Control)
B. Cholesterol, 1%, cholesteryl stearate, 1%.
C. Cholesterol, 3%, cholesteryl stearate, 3%.
D. Cetyl alcohol, 1%, cetyl stearate, 1%.
E. Cetyl alcohol, 3%, cetyl stearate, 3%.
F. Cetyl alcohol, 1%, cetyl-12-hydroxystearate, 1%.
G. Cetyl alcohol, 3%, cetyl-12-hydroxystearate, 3%.

In each instance the alcohol-ester combination replaced an equal weight of water. It was incorporated in the oil phase before emulsification was effected.

After the bases had cooled to room temperature, they were transferred to tared Petri dishes, the surfaces smoothed with a spatula and the whole weighed. The samples were then exposed to the air at room temperature for one week, care being taken to protect them from air-borne dust and dirt. After exposure the weight was again determined and the loss calculated. The samples were then inspected, the appearance, consistency and washability being noted.

All modifications of each base were exposed at the same time as the plain base. In this way, differences due to variations in temperature and relative humidity were minimized.

In the hope that it might be possible to develop an accelerated test, some series of bases were placed in an oven the temperature of which was maintained at 40°. However, in no instance was it possible to obtain consistent results. Duplicate samples from the same batch of base, placed side by side in the oven showed variations of 100% or

Table I.—Effect of Alcohol-Ester Mixtures on Water Loss

	PERCENTAGE OF TOTAL WATER LOST						
	BASE I	BASE II	BASE III	BASE IV	BASE V	BASE VI	BASE VII
A.	95.1	62.2	89.5	90.3	96.1	42.0	77.8
B.	91.0	84.4	44.6	72.1	96.8	52.1	92.0
C.	99.2	76.3	81.3	28.8	99.0	44.2	82.2
D.	83.7	69.7	54.7	74.9	95.9	50.3	91.8
E.	78.7	79.2	64.5	56.0	89.1	23.2	87.3
F.	77.1	65.9	46.3	95.7	92.7	16.1	91.7
G.	73.5	72.5	82.1	79.4	89.9	25.3	89.6

more in water loss. Furthermore, there was no correlation between the heat tests and the shelf tests conducted as described above. Similar findings have been noted in studies on the stability of emulsions.[5]

The results of these studies are listed in Table I on the preceding page.

Discussion

Base I. Stearate-Base Vanishing Cream.—In all but one instance (C) the addition of the alcohol-ester combination brought about a decrease in water loss. The most effective combination was G, which reduced the water loss 21.5% below that of the control. The least effective combination was C (cholesterol 3%, cholesteryl stearate 3%) which actually increased the water loss by 4.1%, whereas combination B (1% of each of the same compounds) showed a slight reduction in water loss.

When first prepared, all of the modifications of Base I were smooth and washable and vanished upon rubbing on the skin. At the conclusion of the test, all were hard, the surfaces were cracked and none exhibited any appreciable washability.

Base II. Stearate-Base Vanishing Cream with 5 Gm. of White Petrolatum.—The results obtained with this series exhibit two significant features. First, all ester-alcohol combinations increased the water loss over that of the control. Second, with the exception of E and G, the bases of this series lost considerably less water than the corresponding bases of Series I.

When freshly prepared, all the bases of this series were smooth and washable. Upon rubbing on the skin, a very slight but not undesirable oily film remained. After one week's exposure all of these bases were smooth but were too firm to be easily spread and were difficult to wash.

Base III. Stearate-Base Vanishing Cream with 20 Gm. of White Petrolatum.—All of the modifications lost less water than did the control. It is of interest to note that the 1% combinations were more effective than the corresponding 3% combinations. Furthermore, the series as a whole lost less water on the average than either Series I or II although there was individual variation (C and G) and the control lost more water than Control II.

None of the freshly prepared bases of this series vanished completely when rubbed on the skin and all left an undesirable, oily film. After one week's exposure, all of the bases were smooth but very firm, difficult to spread and unsatisfactory as far as washability was concerned.

Base IV. Gibson Base.—In only one instance (F) did the loss of water from a modified base exceed that of the control. Combination C effected the most striking decrease in water loss of any combination in any of the series in this study, namely, from 90.3% for the control to 28.8%, a decrease of 61.5%.

While emulsification of Bases A, B and C was easily carried out in the manner described above, it was necessary to transfer Bases D, E, F and G to a mortar and complete the emulsification by trituration.

When first prepared the bases were smooth and washable and of good consistency. After the week's exposure all were firm, greasy in appearance and washability was markedly reduced.

Base V. Beeler Base.—None of the alcohol-ester combinations employed in this series effected any significant increase or decrease in water loss.

When first prepared all bases were washable and acceptable cosmetically and were similar to whipped cream in consistency. After the one-week test period they were either dry and granular (A, D and F) or smooth but very stiff (B, C, E and G) and washability was very much reduced.

Base VI. Glyceryl Monostearate Base.—The bases of this series exhibited the lowest average water loss of any studied. However, in the case of combinations B, C and D, the loss was greater than that of the control while that of the others was decidedly less. When the cholesterol-cholesteryl stearate and cetyl alcohol-cetyl stearate combinations were used, the water loss was less when the greater percentage of combination was present while the reverse was true in the case of the cetyl alcohol-cetyl-12-hydroxystearate mixture.

All the bases of this series were satisfactory when first prepared. At the end of the exposure period all were soft, smooth, greasy and virtually non-washable.

Base VII. Bentonite-Glyceryl Monostearate Base.—Although it might have been expected that bentonite, due to its colloidal character, would have materially inhibited water loss, it is apparent that this

was not the case. Furthermore, the combination of bentonite with the alcohol-ester mixtures led to an increase in water loss in all instances.

Initially, the bases were washable and of a light tan color but acceptable cosmetically. After exposure they were soft and sticky but still washable.

One fact of general interest is that those bases which contained white petrolatum as one of the components lost less water, on the average, than those which contained no white petrolatum. Averaging the water loss of each series as a whole, it was found that Series II, III, IV and VI, all of which contained white petrolatum, lost 73, 66, 71 and 36% of their water, respectively, while Series I, V and VII, which contained no white petrolatum, lost 85, 94 and 87% of their water, respectively. It seems obvious that the white petrolatum plays an important part in the phenomena observed.

The significance of the results obtained in this study lies not so much in the fact that in only slightly more than 50% of the cases a decrease in water loss was effected as it does in the striking decreases found in some instances. For example, in Series IV, Base C lost less than one-third as much water as the control did. Other striking examples are Bases B and F in Series III and E and G in Series VI which lost only about one-half as much water as the respective controls, and Base F of Series VI which lost slightly more than one-third as much water as the control.

At present there seems to be no good explanation for the occurrence of these phenomena. One can merely speculate that, since the evaporation of water from these semi-solid preparations can initially take place only at the surface, either the alcohol-ester mixtures alone or in combination with white petrolatum alter the surface characteristics in such a way as to hinder free evaporation. Investigations are now under way in this laboratory to determine whether or not the observed phenomena are related to some of the measurable physical characteristics of these bases or their components.

Summary

The influence of mixtures of cholesterol and cholesteryl stearate, cetyl alcohol and cetyl stearate, and cetyl alcohol and cetyl-12-hydroxystearate on the water loss from seven washable ointment bases has been studied. The bases employed were: a stearate-base vanishing cream, two modified stearate-base vanishing creams (white petrolatum added), two bases containing sodium lauryl sulfate as emulsifying agent and two in which the emulsion was promoted by glyceryl monostearate, one of the last named also containing bentonite. While no general uniformity of effect was found, some striking reductions in water loss were effected. White petrolatum appears to play an important part in bringing about the reduction.

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A.M.A. Group to Study Effectiveness and Safety of Pesticides

Studies to determine the effectiveness and safety of pesticides are planned by the American Medical Association Joint Committee on Pesticides, Bernard E. Conley, R.Ph., of Chicago, committee secretary, has announced.

This decision is the outgrowth of a recent meeting in the A.M.A. headquarters in Chicago which was attended by representatives of the A.M.A. Councils on Pharmacy and Chemistry and Foods and Nutrition, the Federal Food and Drug Administration, State departments of public health, private and industrial toxicological laboratories, and research institutes and trade associations.

The committee, a branch of the A.M.A. Council on Pharmacy and Chemistry, will coordinate various medical activities interested in the pesticide problem and assist physicians and pharmacists in overcoming the difficulties which new pesticides present. Mr. Conley said, "The committee hopes to meet this problem with its planned program" and that "it was the conclusion of the conference that the committee could best serve medicine and the public by undertaking these immediate objectives:

"1. Establish safe standards for use.
"2. Foster development of prophylactic and antidotal measures.
"3. Stimulate voluntary control.
"4. Assist in standardization of nomenclature.
"5. Accumulate and evaluate new information.
"6. Implement an intensive educational program."

COLLEGES

Rho Chi and Lambda Kappa Sigma sponsored a booth at the annual Activity Roundup of **Washington State College,** showing the changes made in the compounding of drugs in the last few centuries. On one side of the exhibit were displayed a coiled snake, skull, oldstyle beam balance, and many crude drugs used years ago, while on the other side were a new Torsion balance, intravenous feeding tubes, penicillin inhalers, and a number of the new antibiotics.

The senior class seminar programs for the **University of Buffalo** School of Pharmacy during November included talks on the following topics: "Modern Dental Therapeutics and Their Use in the Prevention of Dental Caries," "Hospital Pharmacy," "Responsibilities of the State Board of Pharmacy," and "Natural and Synthetic Endocrine Products of Clinical Value."

Ten research fellowships will be awarded for one calendar year in the fields of medicine, dentistry, and pharmacy by the **University of Illinois** Graduate College in Chicago. Appointments will be announced March 1 for fellowships beginning July 1 or September 1. The fellowships carry stipends of $1200 per year for pharmacy graduates, with exemption from tuition fees. Registration in the Graduate College for full time credit toward M.S. or Ph.D. degrees is required. Formal application blanks may be secured from the Assistant Dean, Graduate College, University of Illinois, 808 S. Wood St., Chicago 12, Ill.

At a special assembly of the students at the **Philadelphia College of Pharmacy and Science** on December 15, the winners of 16 scholarships and one fellowship were announced. A graduate fellowship is held by Bal Krishan Mehra of India. Undergraduates who were awarded the various scholarships are: David A. Brodie, Wilmington, Del.; Mary L. Milligan, Lansdale, Pa.; Charles A. Fenstermacher, Scranton, Pa.; George V. Rossi, Ardmore, Pa.; Mary Elizabeth Harrington, Lansdowne, Pa.; Arthur B. H. Lee, Honolulu T. H.; Frank A. Kapral, Roseland, Pa.; Vincent P. Vendetti, Renovo, Pa ; William J. Sherman, Charles K. Mervine, Solomon J. Hasiuk, Nathan Brillman, Gerard Maerker, Daniel C. Brown, Robert Rabin, and William R. Ross, Jr., all of Philadelphia, Pa.

Beginning with the 1950–1951 long session, the College of Pharmacy and the School of Journalism of the **University of Texas** will offer an optional 5-year curriculum leading to a bachelor of science degree in pharmacy and a bachelor of journalism degree. This course will prepare students to fill positions as pharmaceutical journal editors or writers for pharmaceutical manufacturers. To fill the need for librarians who know pharmacy, four undergraduate library science courses have been approved as pharmacy college electives.

Jack T. Bryan and John E. Winter of Birmingham, both graduates of **Howard College** Department of Pharmacy, have been awarded fellowships for graduate study at the **University of Florida.**

Three seniors in the **Southwestern State College** School of Pharmacy who were chosen by the faculty for "Who's Who among Students in American Colleges and Universities" are: Kenneth Eck of Healdton, Okla., president of the senior class; Dale Gunnels of Bowling Green, Ky., president of Southwestern Student Council; and Frank Mock of Elk City, Okla., president of A. PH. A. Student Branch of the College.

Dr. Heber W. Youngken, professor of pharmacognosy and biology, **Massachusetts College of Pharmacy,** presented two addresses before the Plant Institute of the **Ohio State University** at Columbus, during November. His topics were: "The Production of Medicinal Plants and Some of Its Problems" and "Insecticides and Rodenticides of Plant Origin." He also addressed the students of the university's college of pharmacy on "The Scope of Pharmacognosy and Its Relation to Pharmacy and Industry."

MANUFACTURERS

Harry D. Davis has been appointed manager of the professional service division of **Sandoz Pharmaceuticals.**

Sharp and Dohme, Inc., Philadelphia, has awarded a $1500 grant to the University of Illinois College of Pharmacy for the purpose of establishing a research investigation of the method of controlling drugs in hospitals. Research grants have been awarded by Sharp & Dohme to Samuel L. Meyer and Lowell F. Bailey in support of investigational studies on antiseptics which they are conducting at the University of Tennessee, and to H. Brieger, Jefferson Medical College, Philadelphia, to enable him to conduct clinical studies on tetraethylthiuram disulfide.

A five-day refresher course on new drug developments was held in New York City from December 12 through December 16 by **Winthrop-Stearns, Inc.** A highlight of the course was the visit by 20 of the

firm's divisional managers to the new laboratory building of the Sterling-Winthrop Research Institute at Rensselaer, N. Y., which is scheduled for dedication next May.

Dr. E. Westervelt Dennis, formerly associate director, has been appointed director of the biological division of **Sterling-Winthrop Research Institute**, succeeding Dr. Lloyd Miller who is the new director of revision of U. S. P. XIV. Dr. Dennis graduated from the University of Oklahoma City and received his Ph.D. from the University of California. He joined the staff of the Institute in 1945.

George H. Murphy, a director and vice-president of **Personal Products Corp.**, has been elected executive vice-president.

The **A. H. Robins Co. Inc.**, and the Robins family of Richmond, Va., have set up a fund for the establishment of a pharmacy in the new Memorial Hospital proposed for Richmond. The pharmacy will be in memory of Claiborne Robins, a native of Richmond and a graduate of both the University of Richmond and the Medical College of Virginia's School of Pharmacy, who served as the company's first president until his death in 1912.

The formal opening of the new $500,000 Los Angeles branch headquarters of **E. R. Squibb & Sons** was attended by 2500 people, including Los Angeles public officials, leading pharmacists from the Southwest, company officials, and employees and their guests.

Dr. Joseph Mignone, a member of the staff of Yale University for the past 15 years, has been appointed medical director of the Ernst Bischoff Company, Ivoryton, Conn.

Ayerst, McKenna & Harrison, Ltd. announce the appointment of Edward C. Reifenstein, Jr., M.D., as executive director of their Medical and Research Division. Dr. Reifenstein, an authority on endocrinology, has been a research associate to Sloan-Kettering Institute and will continue as a cancer research consultant to that group.

Henry R. Herold, sales representative for Richard Hudnut for the last 27 years, has been elected a vice-president of **William R. Warner & Co., Inc.**, and Hudnut Sales Co.

T. F. Davies Haines has been named to succeed Joseph S. Bates as president of **Ciba Pharmaceutical Products, Inc.** Mr. Haines, who received his B.A. degree from Yale University and his LL.B. from Harvard, played an active part as counsel in the early development of Ciba and has been a member of the board of directors since 1946.

Dr. Richard H. Barry, who has been director of research for the **Maltbie Chemical Co.** during the last three and one-half years, has been appointed director of research of the **Central Pharmacal Co.**, Seymour, Ind. Dr. Barry received his B.S. degree from Duquesne University, Pittsburgh, and M.S. and Ph.D. degrees from the University of Maryland, Baltimore.

HOSPITAL PHARMACY

1950 Hospital Pharmacy Institutes

The AMERICAN PHARMACEUTICAL ASSOCIATION again will be one of the sponsoring organizations for the annual Institute on Hospital Pharmacy which is scheduled to be held in Ann Arbor, Mich., from June 19 to 23. Present plans call for housing as well as meeting accommodations for the enrollees in one of the dormitories of the University of Michigan.

Members of the planning committee include the following representatives of the sponsoring organizations: *Chairman*, Don E. Francke, chief pharmacist, University Hospital, Ann Arbor; Dr. Albert C. Kerlikowske, director of the University Hospital, Ann Arbor; Robert P. Fischelis, A. PH. A. Secretary; I. Thomas Reamer, president-elect, American Society of Hospital Pharmacists; Dr. Charles T. Dolezal, assistant director, American Hospital Association, and Gloria Niemeyer, assistant director, Division of Hospital Pharmacy.

Plans are also being made by the Catholic Hospital Association to hold an Institute on Hospital Pharmacy prior to the Association's annual convention which will be held in Milwaukee early in June. As in the past, the A. PH. A. will cooperate in sponsoring this institute.

Better Patient Care Through Coordination

"Better Patient Care Through Coordination" is the title of an article recently published by J. R. McGibony, M.D., and Louis Block, Dr.P.H., in *Public Health Reports*, **64:** 1499 (November 25, 1949). This planning guide refers to the present situation existing in hospital care in the United States and outlines the administrative services for providing a coordinated plan in an effort to provide better patient care.

Development of the various hospital services in the fields of clinical services, administration and education are covered. Every phase of hospital care is reviewed with suggested steps which might be taken to improve facilities and to cut down operating expenses through better planning.

Referring to pharmaceutical services in hospitals, it is pointed out that about five per cent of the total cost for hospitalization comes under pharmaceutical service. At this time less than 40 per cent of all general hospitals have a full-time pharmacist. The situation in hospitals of less than 100 beds is somewhat more acute since a very small percentage provide pharmaceutical service. To meet the exist-

ing situation, the guide makes the following suggestions in regard to providing better pharmaceutical service in all hospitals:

1. Formation of an active pharmacy committee.
2. Development of simplified formulary.
3. Guidance on purchase, storage, inventory, and control of drugs.
4. Simplification of standardized forms and records.
5. Proper narcotics and barbiturates control.
6. Manufacturing.
7. Professional and administrative audit of pharmaceutical activities.
8. Space, equipment, and staffing requirements.
9. Conferences and educational activities pertaining to pharmacists and pharmaceutical services.

To carry out the overall plan, it is suggested that a regional council be set up to serve as a guide in hospital planning. Members of the council would include representatives of member hospitals, physicians and public-spirited lay persons. The staff of consultants and advisers should also include a pharmacist.

Hospital Pharmacy Policy Committee Meets

The Policy Committee of the Division of Hospital Pharmacy met at A. PH. A. headquarters on December 10 with the following members in attendance: Herbert L. Flack, Don E. Francke, Albert P. Lauve and W. Arthur Purdum, representing the American Society of Hospital Pharmacists; Robert P. Fischelis representing the AMERICAN PHARMACEUTICAL ASSOCIATION; Robert R. Cadmus, M.D., representing the American Hospital Association, and Sister Mary Adelaide representing the Catholic Hospital Association. I. Thomas Reamer, president-elect of the A. S. H. P., and Gloria Niemeyer, assistant director of the A. PH. A. Division of Hospital Pharmacy, were present by invitation.

VA Appoints New Hospital Managers

The Veterans Administration has announced the appointment of three new VA hospital managers. The new managers and the hospitals in which they will be in charge are: Dr. Harry H. Botts, Chillicothe, Ohio; Dr. Richard L. Harris, Peekskill, N. Y.; and Dr. Arvin E. Trollinger, Marion, Ind.

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A. Ph. A. Branches

STUDENT BRANCHES

MEMBERS of the **Loyola University of the South Branch** arranged a pharmaceutical display for the New Orleans Dental Conference held November 13 through 16, and also prepared quince seed hand lotion which was distributed to the dentists in attendance. At the Branch's meeting on November 15 it was announced that the annual banquet will be held on April 22 at the St. Charles Hotel in New Orleans.

J. R. Badgett of Merck and Co. spoke to members of the **Drake University Branch** on November 29. His subject, "Penicillin Therapy," was supplemented with 45 slides.

Officers elected at the December 13 meeting of the **University of Mississippi Branch** to serve during 1950 are: Henry L. Stowers, president; William L. Fortenberry, vice-president; and Aetna Mae Condon, secretary-treasurer. Prior to the group's business meeting, the Eastman movie, "Triple Exposure," was shown.

The **University of Texas Branch** has elected the following officers for 1949–1950: Stanley Chapman, president; Melvin Shouse, vice-president; Sam Wilkerson, treasurer; Pat Williams, secretary; and Joe Heintschel, parliamentarian. At the November meeting of the Branch, W. H. Bell of the Food and Drug Division of the Texas State Department of Health reviewed Texas drug laws. Two pictures, "Pediatrics Anesthesia" and "Curare in Barbiturate Anesthesia," were shown at the December meeting. On December 16 the all-pharmacy Christmas party was held.

Officers of the **University of Pittsburgh Branch** for 1949–1950 are: William Blockstein, president; D. J. Parlavecchio, first vice-president; Joann Gustafson, second vice-president; Charles Heath, treasurer; and Albert Kossler, secretary. A series of lectures and films is being presented to the Branch members to acquaint them with current problems and practices of pharmacy. "Selling As You Like It" was shown by a representative of Johnson and Johnson at the first fall meeting. On November 2, Professor William Tacey of the University's Speech Department delivered a talk entitled, "The Pharmacist Speaks." Professor Tacey stressed the value of correct speech to a pharmacist and illustrated various situations in which the pharmacist could aid his professional and business progress through effective speech. J. A. Bullock of the Owens-Illinois Glass Co. presented the movie, "Toward Better Pharmacy," at the November 30 meeting of the group. The Branch sponsored the Pharmacy School Christmas party on December 14.

The **Philadelphia College of Pharmacy and Science Branch** held its first meeting of the year on October 26. Dr. Nathan Hall, a member of the faculty, talked to the members on "Pharmacy in the Pacific Northwest" and a movie on manufacturing was shown. On November 10 the student branch sponsored a special assembly of the entire student body, with Dr. Glenn L. Jenkins, A. PH. A. president, as guest speaker. Members were guests at the first public open house and demonstration of the Institute for Cancer Research, Fox Chase, Philadelphia, on December 8. The tour of the Institute was made possible through the efforts of the Philadelphia Branch of the A. PH. A.

Student branch officers of the Philadelphia College for 1949–1950 are: Vincent P. Vendetti, president; Roger Anderson, vice-president; Gerald Wynn, secretary; and William Gillespie, treasurer.

Members of the **Oregon State College Branch** held their last meeting of the school term on December 6. National Pharmacy Week committee members were appointed and their plans for a display will be submitted at a future meeting. Plans are also being formulated for a social program to include all pharmacy students.

LOCAL BRANCHES

THE following officers for 1950 were elected at the November meeting of the **Northwestern Ohio Branch:** Dwight M. Shields, president; Edwin Bohrer, vice-president; Walding G. Rupp, secretary; and Ann Cunningham, treasurer.

"Interpretation of Recent Pharmacy Legislation" was discussed by Samuel Shkolnick, attorney for the Illinois Pharmaceutical Association at the December 13 meeting of the **Chicago Branch.** Dr. Frank Maher and Dr. G. L. Webster of the University of Illinois College of Pharmacy presented another in their series of talks on "What's New at the University" and "What's New in Pharmacy."

The annual two-day conference and seminar of the **Pittsburgh Branch** were held on December 6 and 7. Dr. Frederick D. Lascoff, New York pharmacist and former A. PH. A. second vice-president, discussed prescription problems at the conference and Dean Perry A. Foote of the College of Pharmacy, University of Florida, was guest speaker at the closing banquet.

NNR

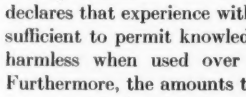
PRODUCTS RECENTLY ACCEPTED BY THE A. M. A. COUNCIL ON PHARMACY AND CHEMISTRY

Council descriptions of new drug products only are published regularly in THIS JOURNAL *as they are accepted. Rules upon which the Council bases its action appeared in the July (7:320) 1946 issue, and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago 10, Ill.*

CLAIMS FOR COLD CURES CRITICIZED BY COUNCIL ON PHARMACY AND CHEMISTRY

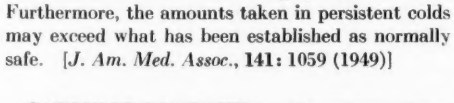
The Council on Pharmacy and Chemistry at a recent meeting warned against the indiscriminate use of antihistaminic substances which are now being promoted for the prevention of colds and even for the treatment of those suffering from colds. The Council, while recognizing that data have been accumulated relative to such uses, is not convinced that they are sufficient to warrant the positive statements that are being made. The Council warns that instances have been reported of users of these drugs becoming drowsy and even falling asleep while at work and, in occasional cases, while driving cars or operating machinery. A review of the present status of these products will be prepared so that physicians who prescribe the drugs may be aware of their possibilities. In the meantime the Council declares that experience with these substances is insufficient to permit knowledge of whether they are harmless when used over long periods of time. Furthermore, the amounts taken in persistent colds may exceed what has been established as normally safe. [*J. Am. Med. Assoc.*, **141:** 1059 (1949)]

CAPRYLIC COMPOUND.—Naprylate—Strasenburgh.—A preparation containing as its active ingredients sodium caprylate and zinc caprylate. Their structural formulas may be represented as follows:



$CH_3CH_2(CH_2)_4CH_2C(=O)-ONa$

Sodium Caprylate



$[CH_3CH_2(CH_3)_4CH_2C(=O)-O]_2Zn$

Zinc Caprylate

Actions and Uses.—Caprylic compound, a mixture of sodium and zinc salts of caprylic acid in specified proportions, has been found to be useful for the prevention and treatment of dermatophytosis pedis and for the control of certain other superficial fungous infections of the skin and accessible mucous membranes. It has been shown to be effective topically against infection due to trichophytons, microsporons and Monilia albicans. In moderate concentrations, caprylic acid salts do not produce irritation or sensitization of the skin and are not subject to absorption from the skin or mucous membranes.

Dosage.—Caprylic compound is employed in the proportions of sodium caprylate 10% and zinc caprylate 5%. It is topically applied to the skin in the form of powder or ointment after thorough cleansing of the affected part. The two may be used concomitantly, the powder being applied during the day and the ointment during the night. The powder may also be dusted into the shoes and stockings for the control of susceptible fungous infections involving the feet. The ointment is also used in the treatment of monilial stomatitis or thrush.

Caprylic compound is applied also in the form of vaginal suppositories for the control of monilial vulvovaginitis.

Tests and Standards.—

Sodium Caprylate.—The sodium salt of caprylic acid.—$C_8H_{15}O_2Na$.—M. W. 166.199.

Sodium caprylate occurs as cream-colored granules. It is freely soluble in water and sparingly soluble in alcohol.

For complete tests and standards see *J. Am. Med. Assoc.*, **141:** 992 (1949).

Zinc Caprylate.—(See monograph on Propionate-Caprylate Mixtures.—This issue of THIS JOURNAL.)

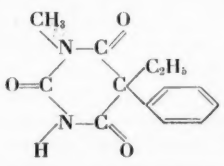
R. J. Strasenburgh Company, Rochester 4, N. Y.

Ointment Naprylate: 2.5-Gm. tubes. An ointment containing 0.1 Gm. of sodium caprylate and 50 mg. of zinc caprylate in each gram in a water-miscible base of wool fat, cetyl alcohol and carbowax 6000.

Powder Naprylate: 60-Gm. sifter cans. A powder containing 0.1 Gm. of sodium caprylate and 50 mg. of zinc caprylate in each gram in corn starch and talc.

Suppositories Naprylate: 3 Gm.

MEPHOBARBITAL.—Mebaral—Winthrop-Stearns—N - Methyl - 5-ethyl - 5 - phenylbarbituric acid.—$C_{13}H_{14}N_2O_3$.—M. W. 246.26.—The structural formula for mephobarbital may be represented as follows:



Actions and Uses.—Mephobarbital produces the sedative effect characteristic of other members of the barbiturate series. Like phenobarbital, but unlike most other members of the series, mephobarbital also exerts a prominent anticonvulsant effect by

selective action on the motor cortex, presumably due to the presence of the phenyl group. Clinical observations indicate that mephobarbital has comparatively mild hypnotic action so that it is better suited for use as a sedative than a soporific. Because its action in animals is not affected by the development of tolerance to other members of the barbiturate series, it is considered to have a different fate in the body than other derivatives of barbituric acid. It is excreted in the urine in traces only, yet exerts the prolonged action characteristic of phenobarbital and other long-acting compounds. The extent of its destruction by the liver has not been determined.

Mephobarbital is chiefly employed as an anticonvulsant for the treatment of grand mal and petit mal epilepsy, though there exists at present among workers in this field some difference of opinion regarding its degree of efficacy in these conditions. It is reported clinically to be somewhat more effective than phenobarbital in petit mal epilepsy. It may occasionally provide better control of both major and minor attacks than either phenobarbital or diphenylhydantoin sodium or when given alternately or in combination with either of those drugs. Mephobarbital is considered inferior to phenobarbital for the management of insane epileptics, but does control seizures in epileptic psychotic persons having only moderately advanced mental changes. It does not cure congenital mental defects or the mental deterioration often observed in epileptic persons. The drug may be used in conjunction with a ketogenic diet.

Mephobarbital is also useful as a sedative, especially in the treatment of agitated, depressed and anxiety states when minimal hypnotic action is desired. Mephobarbital produces side effects of drowsiness and gait disturbance similar to phenobarbital, but these appear to be less pronounced or persistent than with the latter drug. Such symptoms are indications for reduction of the dosage of the drug or its temporary withdrawal. As with other barbiturates, the drug should be used with caution in patients with impaired hepatic function.

Dosage.—Mephobarbital is administered orally in the form of tablets. In epilepsy, the average total daily dose for adults ranges from 0.4 Gm. to 0.6 Gm., though as little as 0.2 Gm. or as much as 0.8 Gm. may be required in some patients. Patients who have seizures principally at night who require not more than 0.4 Gm. daily may be given the entire dose at bedtime. For attacks during the day, half the daily dose required should be given during waking hours and half at night. Children under 5 years of age may be given a total daily dose of 0.03 Gm. to 0.06 Gm. and older children 0.06 Gm. to 0.3 Gm. Treatment should be started in all cases with a small initial dose and increased gradually over a period of four to five days until the optimum dosage is determined.

In combination with phenobarbital the dosage of each drug should be one-half the full dose as used alone. When the drug is employed concurrently with diphenylhydantoin sodium, the dose of the latter should be reduced, but mephobarbital may be administered in full dosage as when given alone. Satisfactory results have been obtained with an average daily dose of 0.225 Gm. of diphenylhydantoin sodium plus 0.6 Gm. of mephobarbital.

As a sedative, mephobarbital may be administered in doses of from 0.03 Gm. to 0.06 Gm. three or four times daily, depending on the age and condition of the patient.

Tests and Standards.—

Physical Properties: Mephobarbital occurs as white, tasteless, odorless crystals which melt between 177 and 181°. It is soluble in chloroform, slightly soluble in alcohol and ether and very slightly soluble in water. Mephobarbital dissolves in fixed alkali hydroxides and carbonates.

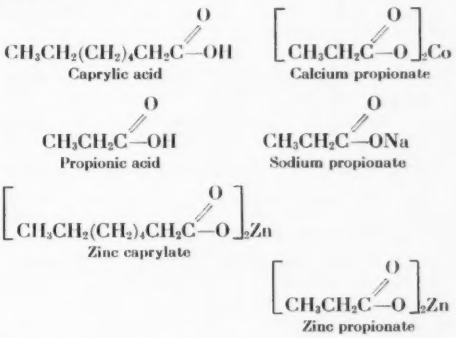
For complete tests and standards see *J. Am. Med. Assoc.*, **141**: 920 (1949).

Winthrop-Stearns, Inc., New York 13, N. Y.

Tablets Mebaral: 32 mg., 0.1 Gm. and 0.19 Gm.

U. S. patent 1,923,239; U. S. trademark 321,093.

PROPIONATE-CAPRYLATE MIXTURES.—Sopronol Propionate-Caprylate Compounds—Wyeth—Preparations in which the formulation is varied with respect to both the ingredients and their concentrations according to the dosage form. The active ingredients are chosen from the following: Calcium propionate, caprylic acid, propionic acid, sodium propionate, zinc caprylate and zinc propionate. Their structural formulas may be represented as follows:



For description and standards for sodium propionate see the National Formulary.

Actions and Uses.—Propionate-caprylate compound is proposed for use against superficial fungous infections, especially dermatophytosis of the feet, hands and groin.

Dosage.—Cleanse the affected parts and apply morning and night.

Calcium Propionate.—The calcium salt of propionic acid.—$C_6H_{10}O_4Ca$.—M. W. 186.224.

Tests and Standards.—

Calcium propionate occurs as a white powder possessing not more than a faint odor of propionic acid. It is freely soluble in water and very slightly soluble in alcohol.

For complete tests and standards see *J. Am. Med. Assoc.*, **141**: 919 (1949).

Caprylic Acid.—n-Octanoic acid.—$C_8H_{16}O_2$.—M.W. 144.21.—Caprylic acid occurs as a yellow to light amber, oily liquid with a characteristic goatlike odor. It is practically insoluble in water and very soluble in alcohol. Its refractive index at 25° is 1.4270. The specific gravity of caprylic acid at 25° is about 0.9110.

For complete tests and standards see *J. Am. Med. Assoc.*, 141:919 (1949).

Propionic Acid.—Propanoic acid.—Methylacetic acid.—$C_3H_6O_2$.—M.W. 74.08. Propionic acid occurs as a colorless liquid, possessing a characteristic odor and an acidic reaction. It is very soluble in water and in alcohol. The refractive index at 25° is about 1.3850. The specific gravity of propionic acid at 25° is 0.9924.

For complete tests and standards see *J. Am. Med. Assoc.*, 141:919 (1949).

Zinc Caprylate.—The zinc salt of caprylic acid.—$C_{16}H_{30}O_4Zn$.—M.W. 351.784. Zinc caprylate occurs as a very fine white powder. It is practically insoluble in water and in alcohol.

For complete tests and standards see *J. Am. Med. Assoc.* 141:919 (1949).

Zinc Propionate.—The zinc salt of propionic acid.—$C_6H_{10}O_4Zn$.—M.W. 211.524. Zinc propionate occurs as a very fine white powder. It is sparingly insoluble in water and in alcohol.

For complete tests and standards see *J. Am. Med. Assoc.*, 141: 919 (1949).

Wyeth, Inc., Philadelphia 3, Pa.

Ointment Sopronol Propionate-Caprylates Compound: 30-Gm. tubes. A water-soluble ointment containing 12.3% sodium propionate, 2.7% propionic acid, 10% sodium caprylate, 5% zinc caprylate and 0.1% dioctyl sodium sulfosuccinate.

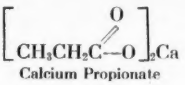
Powder Sopronol Propionates-Caprylate Compound: 60-Gm. and 150-Gm. canisters. A dusting powder containing 15% calcium propionate, 5% zinc propionate, 5% zinc caprylate and 0.25% propionic acid in a talc base.

Solution Sopronol Propionate-Caprylate Compound: 60-cc. bottles. A dilute *n*-propyl alcohol solution containing 12.3% sodium propionate, 2.7% propionic acid, 10% sodium caprylate, and 0.1% dioctyl sodium sulfosuccinate.

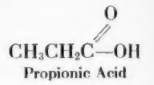
PROPIONATE COMPOUND JELLY.—Propion—Wyeth.—A propionate-propionic acid mixture of calcium propionate 9.5%, sodium propionate 9.5% and propionic acid, 1% marketed in the form of a water-miscible jelly.

For description and standards for Sodium Propionate, see the National Formulary, and for Calcium Propionate and Propionic Acid see Tests and Standards under Propionate-Caprylate Mixtures which appears in this issue of THIS JOURNAL.

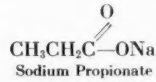
The structural formulas of the active ingredients may be represented as follows:



Calcium Propionate



Propionic Acid



Sodium Propionate

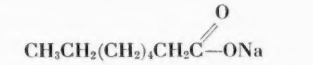
Actions and Uses.—Propionate compound is used in the form of a jelly for local application in the treatment of vulvovaginal moniliasis. Until more evidence becomes available, it is not recommended for other mycotic infections of the vulva or vagina, despite the fact that propionic acid compounds have been shown to be effective against a variety of fungous infections of the skin. It should be kept in mind that monilia are occasionally found in the vaginal secretions of apparently normal women and, when associated with Trichomonas infection, treatment of the latter sometimes suffices to clear up the symptoms. The relationship between these two organisms in vulvovaginitis is not yet completely understood.

Dosage.—Approximately 6 cc. of a jelly containing the propionate-propionic acid mixture of the aforementioned proportions is applied to the upper part of the vagina twice daily (morning and night) by means of an applicator. A single plain water douche is recommended before the first application, but douches are not permitted during treatment. A small amount of the jelly should be externally applied to the vulva. When there is considerable excoriation, the first two or three external applications should be made with the jelly diluted with an equal volume of water. Culture for monilia to determine cure may be taken two days after therapy has been discontinued. Vaginal applicators should not be used after the seventh month of pregnancy.

Wyeth, Inc., Philadelphia 3, Pa.

Propion Gel.—95-Gm. tubes with vaginal applicator. A water-miscible jelly containing calcium propionate 9.5%, sodium propionate 9.5% and propionic acid 1.0% in a base containing propylene glycol 10% and bentonite 32%.

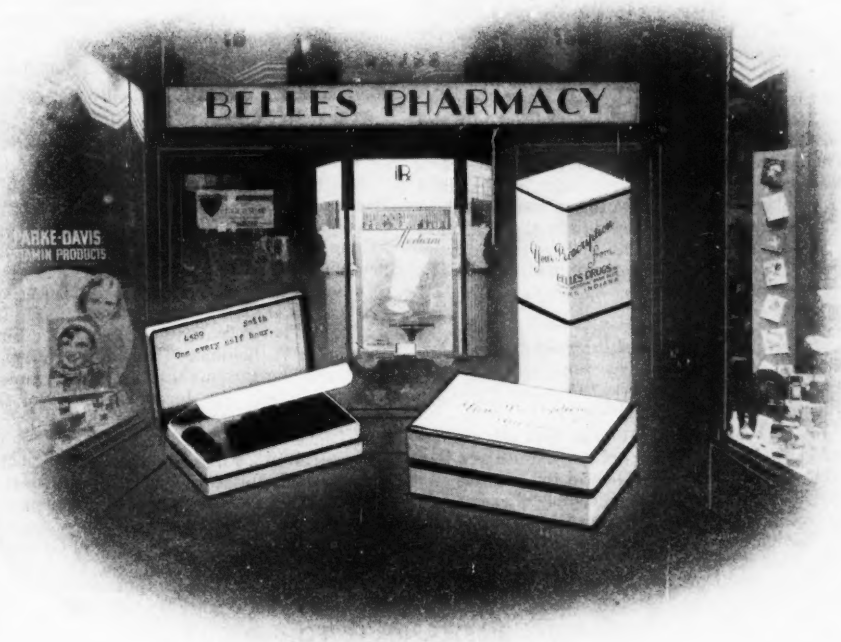
SODIUM CAPRYLATE.—The sodium salt of caprylic acid. The structural formula may be represented as follows:



Actions and Uses.—Sodium caprylate is used for topical application in the treatment of superficial fungous infections of the skin due to trichophytons, microsporons and Monilia albicans. It is not ob-

(*Continued on Page 64*)

THIS IS YOU . . . .



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BOOK REVIEWS

Organic Chemistry in Pharmacy. EDITED BY CHARLES O. WILSON AND OLE GISVOLD. J. B. Lippincott, Philadelphia, 1949. xiv + 622 pp. 17.5 x 26 cm. Price $9.

This book presents the chemistry of organic medicinal products, including practically all of those contained in the U. S. P. XIII, N. F. IX, and New and Nonofficial Remedies. It is intended primarily as a textbook for students of pharmacy who have completed basic organic chemistry, and it is well suited for this purpose. It includes the structures of most of the products and describes briefly their chemical properties and syntheses, as well as their physiological action and the therapeutic usefulness. The dose is given in most cases.

Fundamental Principles and Processes of Pharmacy. HENRY M. BURLAGE, EDITOR. McGraw-Hill Book Company, New York, 1949. xiv + 651 pp. Illustrated. 14 x 21 cm. Price $5.

Since its original publication in 1944 this volume has found considerable recognition and use as a text for introductory courses in pharmacy. In this second edition the type has been completely reset in a more readable fashion and improvements in text material have been made throughout the volume.

Frequent illustrations and drawings add to the interest and ease of interpretation of the text.—JOSEPH B. SPROWLS.

Pharmaceutical Compounding and Dispensing. RUFUS A. LYMAN, EDITOR-IN-CHIEF. J. B. Lippincott, Philadelphia, 1949. ix + 321 pp. 17.5 x 26 cm. Price $6.50.

This book, like its predecessors in the *American Pharmacy Series*, is constituted of the contributions of a number of authors. The chapter headings are as follows (author's surname in parentheses): 1. Dispensing Through the Ages (Urdang); 2. The Prescription (Plein); 3. Accuracy in Dispensing (Ohmart); 4. Dosage Forms (Ohmart); 5. Dermatological Pharmaceuticals (Zopf); 6. Solutions (Sprowls); 7. Solubility (Higuchi); 8. Incompatibility and the Incompatibilities of Inorganic Compounds (Busse); 9. Incompatibilities of Organic Compounds (Wurster); 10. Prescription Packages and Labels (Snowden); 11. Prescription Pricing (Briggs); and 12. Interprofessional Relations (Foote).

In general, this reviewer believes that this is a good book, excellent for reference, but requiring considerable supplementation in most courses of compounding and dispensing.—ELMON L. CATALINE.

BOOKS RECEIVED

Introductory Botany. BY ALEXANDER NELSON. The Chronica Botanica Co., Waltham, Mass., 1949. viii + 479 pp. Illustrated. 14 x 22 cm. Price $3.75.

Review of Pharmacy. 6th ed. BY GEROGE W. FIERO. John Wiley and Sons, New York, 1949. 121 pp. 15 x 23 cm. Price $3.

Malaria—The Biography of a Killer. BY LEON J. WARSHAW. Rinehart and Company, New York, 1949. viii + 348 pp. 14 x 22 cm. Price $3.75.

Bulletin on Narcotics. No. 1. A United Nations Department of Social Affairs publication. Columbia University Press, Morningside Heights, N. Y., 1949. 61 pp. Illustrated. 21.5 x 28 cm. Price $0.50.

Antibiotics. BY ROBERTSON PRATT AND JEAN DUFRENOY. J. B. Lippincott Company, Philadelphia, 1949. xi + 255 pp. Illustrated. 15.5 x 23.5 cm. Price $5.

Science and Civilization. EDITED BY ROBERT C. STAUFFER. University of Wisconsin Press, Madison, 1949. xiii + 212 pp. 14 x 21.5 cm. Price $2.50.

Laboratory Fractional Distillation. BY THOMAS P. CARNEY. The Macmillan Company, New York, 1949. vii + 259 pp. Illustrated. 15.5 x 24 cm. Price $5.75.

Laboratory Manual for Pharmacognosy. BY EDWARD P. CLAUS. John E. Kicher, Publisher, Pittsburgh, 1949. 109 pp. 21.5 x 28 cm.

The Analytical Chemistry of Industrial Poisons, Hazards and Solvents. 2nd ed. Chemical Analysis series, Vol. I. BY MORRIS B. JACOBS. Interscience Publishers, Inc., New York, 1949. xviii + 788 pp. Illustrated. 15 x 24 cm. Price $12.

The Essential Oils. Volume III. (Individual Essential Oils of the Plant Families Rutaceae and Labiatae). BY ERNEST GUENTHER. D. Van Nostrand Company, Inc., New York, 1949. xvi + 777 pp. Illustrated. 15 x 23.5 cm. Price $10.

Chymia: Annual Studies in the History of Chemistry. Volume II. TENNEY L. DAVIS, EDITOR-IN-CHIEF. University of Pennsylvania Press, Philadelphia, 1949. x + 143 pp. Illustrated. 15 x 24 cm. Price $4.

Pharmaceutical Selling, "Detailing," and Sales Training. 1st ed. BY ARTHUR F. PETERSON. McGraw-Hill Book Company, New York, 1949. xviii + 374 pp. Illustrated. 15 x 23.5 cm. Price $4.50.

The Rat in Laboratory Investigation. 2nd ed. EDITED BY EDMOND J. FARRIS AND JOHN Q. GRIFFITH. J. B. Lippincott, Philadelphia, 1949. xvi + 542 pp. Illustrated. 15 x 23.5 cm. Price $15.

Vegetable Gums and Resins. BY F. N. HOWES. Waltham, Mass.: The Chronica Botanica Co.; New York City: Stechert-Hafner, Inc., 1949. xx + 188 pp. Illustrated. 17.5 x 26.5 cm. Price $5.

SURVEY FINDINGS ANALYZED

(Continued from Page 31)

with the advanced study required to qualify for teaching service. By following this procedure, the colleges and schools of pharmacy would do much toward guiding superior students, those best qualified, into pursuing a career of pharmacy teaching. Over a period of years this would help result in the gradual professional upgrading of pharmacy teachers.

Compensation, Teaching Loads, and Research

One of the principal recommendations of the pharmaceutical survey urged the boards of control and other higher educational authorities to take immediate action with regard to adequate compensation, the reduction of teaching loads, and the provision of opportunity and means for individual research work. Pharmaceutical education is stalemated by the inadequate compensation of those who teach. Salaries ranging from $2,500–$2,999 for instructors, $4,000–$4,499 for assistant professors, $4,500–$4,999 for associate professors and $5,000–$5,499 for full professors cannot meet competition offered by the other segments of pharmacy.

Due to the shortage of teaching personnel, overcrowded pharmacy classes, and the lack of adequate income for many of the schools and colleges of pharmacy, teaching loads have been entirely too heavy for many of those on the teaching staffs. Immediate consideration should be given this problem since it not only impairs the quality of teaching, but it has an adverse effect on research work as well. Those who are overtaxed by heavy teaching loads do not have the necessary time for research work.

Individual research work on the part of the teaching staffs should be encouraged and financed in all schools and colleges of pharmacy. Pharmaceutical manufacturers and governmental agencies cannot be expected to carry on all of the research necessary to the growth and progress of pharmacy. Traditionally, teachers of pharmacy have done much of this work and this practice should be encouraged in every way possible. However, in order to encourage more research on the part of the teaching staff, teaching loads will have to be reduced and the institutions will have to assure adequate financing for the research projects.

REFERENCE

1. "Recent Adventures in Accreditation," an address before the Jacksonville meeting, American Association of Colleges of Pharmacy, April 25, 1949, by Edward C. Elliott.

STRAIGHT FROM HEADQUARTERS

(Continued from Page 17)

a nurse and get paid for it." California, Michigan and Pennsylvania are states without any restrictive legislation at all.

The article exposes the more than 300 so-called "quickie commercial and correspondence schools," some of which claim to teach, in fifty-three lessons by mail, the entire range of nursing skills for $75. These schools, one of which turns out over 200 "graduates" each month, are compared with the civil service training requirement for a practical nurse—400 hours of instruction and 1200 hours of supervised nursing care. One of the commercial schools registers a student in the morning and sends her out as a "nurse" the same evening.

Pharmacists can render a worth-while service by calling attention to the difference between a Registered Nurse, a so-called Practical Nurse, who has legal standing in some States but is not a Registered Nurse, and those who put on white garb and parade under the title of nurse without any of the legal or professional qualifications that go with the title "R. N." Expert nursing care is too important to permit impostors to make a racket out of a professional service. It should be suggested to the sick that Registered Nurses carry credentials showing State licensure and bearing the words, "Registered Nurse." If others are employed, at least the patient or his family should know their limitations.

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ADR

DENTAL REMEDIES RECENTLY ACCEPTED BY A. D. A. COUNCIL ON DENTAL THERAPEUTICS

Admission to Accepted Dental Remedies *means that a product and the methods by which it was marketed at the time of consideration were not found to be in violation of the published rules of the Council on Dental Therapeutics. A summary of the rules appeared in This Journal, 7:153 (April), 1946. Accepted products are reconsidered periodically.*

ANESTHETICS—LOCAL—SLIGHTLY SOLUBLE[1]

Amylsine-Benzocaine Ointment: Each 100 Gm. is stated to contain amylsine base, 4 Gm.; benzocaine, 20 Gm.; clove oil, 2 Gm., in a lanolin-petrolatum base.

Amylsine-Benzocaine Solution: Each 100 Gm. is stated to contain amylsine base, 4 Gm.; benzocaine, 18 Gm., clove oil, 37 Gm., and wintergreen oil. Manufactured by *Novocol Chemical Mfg. Co., Inc., Brooklyn, N. Y.* (Trademark: A.B.N.)

ANTIBIOTICS AND ANTISEPTICS[2]

Penicillin Potassium Tablets (Soluble) 100,000 Units: Stated to contain crystalline penicillin G potassium, stearic acid, sodium bicarbonate and sodium benzoate. In bottles of 12 and 100.

Penicillin Potassium Buffered Tablets, 250,000 Units: Stated to contain crystalline penicillin G potassium, calcium carbonate, cane sugar, corn starch, acacia, talc and magnesium stearate. In bottles of 12.

Penicillin Potassium Buffered Tablets, 500,000 Units: Stated to contain crystalline penicillin G potassium, calcium carbonate, cane sugar, corn starch, acacia, talc and magnesium stearate. In bottles of 12. Manufactured by *Abbott Laboratories, North Chicago, Ill.*

Penicillin-Sulfanilamide Cones, 10,000 Units: Each cone is stated to contain crystalline penicillin sodium, 10,000 units, and sulfanilamide, 0.5 gr. In packages of 50 and 100 cones. Manufactured by *Novocol Chemical Mfg. Co., Inc., Brooklyn, N. Y.*

QUATERNARY AMMONIUM COMPOUNDS[3]

Anzol Solution: Each 100 Gm. is stated to contain benzethonium chloride, 0.25 Gm.; potassium nitrite, 0.27 Gm.; sodium carbonate, 0.15 Gm.; sodium bicarbonate, 0.30 Gm., and water. Manufactured by *Veltex Company, Birmingham, Ala.*

AMMONIA DERIVATIVES[4]

Diammonium Phosphate Crystalline, Diammonium Phosphate Powdered: Brands of dibasic ammonium phosphate.

Diammonium Phosphate Powdered (with 1% Caking Inhibitor): Dibasic ammonium phosphate with 1% dicalcium phosphate. Manufactured by *Monsanto Chemical Company, Anniston, Ala.*

PRELIMINARY COMMENTS ON DENTAL PRODUCTS

The following statements concerning products which are not accepted by the Council on Dental Therapeutics are designed to be free from controversial opinions. The Council may publish comprehensive status reports on these products whenever such reports are warranted, and will accept those which are found to be eligible for acceptance.

Dentammo-NH_4 Brand Ammonia Liberating Tooth Powder

Dentammo-NH_4 Brand Tooth Powder is stated to contain carbamide (urea), 28% and dibasic ammonium phosphate, 5%, plus synthetic detergents and natural flavors. According to the label, it is a "daily aid for control of tooth decay." The label also states that a U. S. patent is pending.

An advertising folder states, "Jamco Co. has incorporated in Dentammo-NH_4 Brand the optimum percentage of carbamide 28% and dibasic ammonium phosphate 5% plus a detergent to dissolve the plaque to give the maximum results in aiding in the prevention of caries.... (it) possesses this dual action which makes it distinctive from most other dentifrices." Most ammoniated dentifrices contain carbamide, dibasic ammonium phosphate and synthetic detergents.

The folder states further, "Its effectiveness has been proven in clinical trials and bacteriological examinations by competent authorities." Publications on products similar to Dentammo-NH_4 Brand Tooth Powder have appeared in the scientific literature.[5,6] Evidence relative to the possible effectiveness of Dentammo-NH_4 Brand Tooth Powder itself has not yet come to the attention of the Council, although the distributing firm stated in a letter dated June 10, 1949, "...clinical evidence and bacteriological tests up-to-date will follow shortly."

Dentrix Dental Cream, Tooth Powder and Mouth Rinse

Dentrix Tooth Powder and Dentrix Ammoniated Dental Cream are stated to contain dibasic ammonium phosphate, 5%, and urea, 3%. According to the distributing firm, Dentrix Mouth Rinse is similar

to the formula developed by Kesel and his associates.[7,8] The dental cream is stated to have a *p*H of 8 and to be only mildly abrasive.

The advertising contains many references to dental caries. Preparations of this type have not been shown to prevent dental caries, although the preliminary results indicate that a tooth powder and mouthwash containing dibasic ammonium phosphate and urea may be responsible for reducing the *Lactobacillus acidophilus* count in many, but not all, caries-susceptible persons.

Evidence relative to the possible effects of Dentrix Dental Cream itself has not yet come to the attention of the Council.

The distributing firm has initiated a scientific investigation of these products and has cooperated with the Council by supplying partial informaton concerning the composition of its products.

For more detailed information concerning this class of products, see "Status of Dentifrices and Mouthwashes Which Contain Dibasic Ammonium Phosphate and Urea" *J. Am. Dent. Assoc.*, 35:504 (1948).

Pyrozide Ammoniated Tooth Paste

This product is stated to contain dibasic ammonium phosphate, carbamide (urea), tricalcium phosphate and sodium lauryl sulfoacetate.

The usual letter of inquiry was sent to the firm in July 1949, but a quantitative statement of composition was not supplied.

According to the package, "Pyrozide Ammoniated Tooth Paste helps retard tooth decay,..." The firm states, "We make no claims as to the medicinal qualities of Pyrozide Ammoniated Tooth Paste," and also that the product is not advertised to the public.

Although there is preliminary evidence to indicate that dentifrices which contain dibasic ammonium phosphate and urea may be partially effective in preventing tooth decay, evidence that Pyrozide Ammoniated Tooth Paste itself is effective for this purpose has not come to the attention of the Council.

For more detailed information concerning this class of products, see "Status of Dentifrices and Mouthwashes Which Contain Dibasic Ammonium Phosphate and Urea," *J. Am. Dent. Assoc.*, 36:504 (1948).

1. See *Accepted Dental Remedies*, ed. 14, p. 57.
2. See *Accepted Dental Remedies*, ed. 14, p. 59.
3. See *Accepted Dental Remedies*, ed. 14, p. 94.
4. See *Accepted Dental Remedies*, ed. 15, p. 48.
5. Council on Dental Therapeutics, American Dental Association, Status of Amm-I-Dent Tooth Powder. *J. Am. Dent. Assoc.*, 38:642 (1949).
6. Henschel, C. J., and Lieber, Leon, Relative Efficacy of 27.5 Per Cent Ammonium Therapy Dentifrice. *J. D. Res.*, 27:715 (1948).
7. Kesel, R. G., The Biological Production of Ammonia in the Oral Cavity in Relation to Dental Caries Activity. *North-West Den.*, 27:127 (1948).
8. Kesel, R. G., *et al.*, Recent Developments in the Biologic Production of Ammonia and the Use of Ammonia and Carbamide in Caries Prevention. *Oral Surg., Oral Med. & Oral Path.*, 2:459 (1949).

Obituary

L. C. Shepherd

THIS JOURNAL has just been advised of the death on November 10, 1949, of L. C. Shepherd who, for many years, was associated with Hynson, Westcott & Dunning, Inc. Mr. Shepherd joined the Hynson, Westcott & Dunning firm in 1913 as western sales manager in charge of the company's Chicago office. He was highly successful in developing the western sales area for the firm. When the various sales territories were consolidated, he was appointed general sales manager and subsequently was elected a vice-president of the company. On his retirement in 1946, he moved from Chicago to Los Angeles where he resided until his death. Mr. Shepherd is survived by his widow.

National Social Hygiene Day

National Social Hygiene Day is February 1. The theme for this year's observance is "Education for Family Life" and the slogan for the event is "Social Hygiene is a Family Affair." Pharmacists are urged to cooperate with their local Social Hygiene Associations in observing National Social Hygiene Day.

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science news capsules

ANTIHISTAMINIC PREPARATIONS for the common cold will upset about one out of five persons, Dr. Perrin Long, professor of preventive medicine at Johns Hopkins University School of Medicine, declared recently. Disturbances in appetite, lessened ability to perform their jobs, sleepiness, and palpitation of the heart are among the symptoms to be expected in some cases.

CHLOROMYCETIN, as a new treatment for syphilis, has been reported by four doctors from George Washington University School of Medicine in the December 9 issue of *Science*. The lesions of early syphilis begin to heal within 24 hours after treatment is started. This is the first report of success with chloromycetin in treating syphilis in humans and trials in late stages of syphilis are now underway.

AUREOMYCIN is effective against whooping cough and lymphogranuloma venereum, a minor venereal disease, according to an article by Drs. Wesley W. Spink and Ellard M. Yow of the University of Minnesota Medical School in the *Journal of the American Medical Association* [**141**, 964(1949)].

CHLOROPHYLL has been tentatively cast in the role of a new healing agent for gum and mouth diseases by Dr. Robert Carroll, a dental researcher at Loyola University's Chicago College of Dental Surgery. The rapid healing effects of a chlorophyll tooth paste and solution in cases of nonspecific gingivitis, trench mouth, and other gum and mouth disorders have been demonstrated, Dr. Carroll states.

DRAMAMINE, the chemical that both prevents and relieves motion sickness, has a new use now. Patients who have had the so-called window operation to cure deafness often experience vertigo, nausea, and vomiting after the operation. Dramamine relieves these effects, according to Dr. Edward H. Campbell of the Graduate School of Medicine, University of Pennsylvania. The results were included in a report to the American Medical Association by Drs. Leslie N. Gay and Paul E. Carliner of Johns Hopkins University School of Medicine, who were the discoverers of Dramamine's anti-motion sickness effects.

TWICE AS MANY cancer, leukemia, and other patients per day can be given X-ray treatments as was formerly possible with a new machine announced by the General Electric X-Ray Corporation. The machine, named the Maxitron 250, also has a new style tube which makes it easier to give X-ray treatments to parts of the body which are difficult to reach with other types of machines.

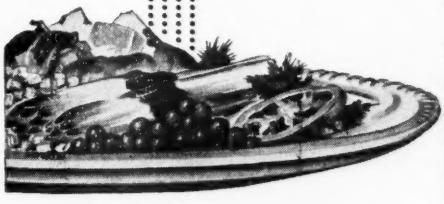
TETANUS symptoms have been relieved by two New Orleans doctors through the administration of a muscle-relaxing drug. The compound, Tolserol, introduced in England as Myanesin, has been used previously in anesthesia and neurologic diseases. An article in the *Journal of the American Medical Association* [**141**, 754(1949)] reports that moderately severe muscle rigidity and spasm were controlled satisfactorily in seven patients. Doses of Tolserol were given concurrently with phenobarbital.

UNDECYLENIC ACID when administered orally to laboratory animals is of notably low range of toxicity. Dr. Richard Tislow of Bloomfield, N. J., reported this finding at a meeting of the American Society for Pharmacology and Experimental Therapeutics.

MICROSCOPES have been given added powers in two different ways recently. General Electric Research Laboratory has announced an X-ray microscope in which X-rays are passed through the material being studied and then strike a pair of curved mirrors at an angle of less than one-half degree. The mirrors bend the X-ray beams so as to cast a magnified X-ray image of the sample on a photographic film, and magnifications of 100 diameters have been produced. American Optical Company's Research Laboratories have announced a microscope with a newly designed reflecting system that can use both the visible and invisible regions of the spectrum, particularly ultraviolet and infrared. This instrument may be an important aid to cancer research.

COBALT made radioactive in the Atomic Energy Commission's pile at Oak Ridge has been used to treat 35 cancer patients, chiefly women suffering cancer of the cervix. The results should be slightly better than those that would be expected if radium had been used, although it is too soon and too few patients have been treated so far to be sure of this.

PERAZIL CHLORCYCLIZINE has shown good results as a new and longer-acting chemical for treating hay fever and other allergies. Drs. Louis Cullick and Henry D. Ogden of Louisiana State University Medical School and Charity Hospital, New Orleans, report this finding, and state that the patients need take only one or two tablets daily.



Cardiac failure, renal disease, hypertension, arteriosclerosis, or pregnancy complications call for sodium restriction. But, without seasoning, low sodium diets are difficult to endure.

Salt without sodium: Neocurtasal palatably seasons all foods.

Neocurtasal looks, pours and is used like table salt. Available in convenient 2 oz. shakers and 8 oz. bottles.

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» » N. A. R. D. PRESIDENT IS HONORED AT TESTIMONIAL DINNER « «

FRANK W. MOUDRY, St. Paul, Minn., pharmacist and president of the National Association of Retail Druggists, was a guest of honor at a testimonial banquet in St. Paul on November 17. More than 500 pharmacists and their wives, representatives of manufacturers and wholesalers, and public officials joined to pay tribute to Dr. Moudry and praise him for his numerous contributions to the progress of pharmacy.

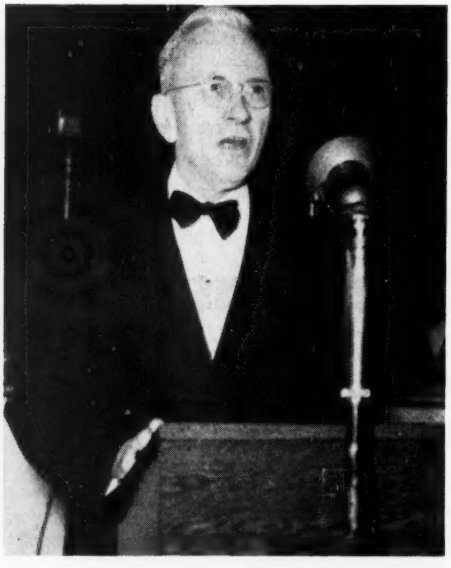
Greetings from the AMERICAN PHARMACEUTICAL ASSOCIATION were extended by President-elect Henry H. Gregg, who lauded Mr. Moudry's activities in national pharmaceutical affairs, emphasizing particularly his work in the National Association of Boards of Pharmacy and as presiding officer over the joint meetings of the Executive Committee of the N. A. R. D. and the Council of the A. PH. A.

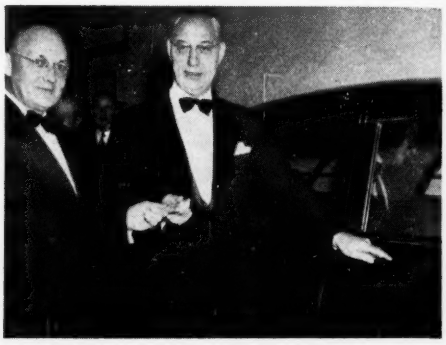
Among the other principal speakers at the affair were Governor Luther Youngdahl of Minnesota; Mayor Edward K. Delaney of St. Paul; N. A. R. D. Secretary John W. Dargavel; Dr. E. M. Hammers, president of the Minnesota Medical Association; Dr. J. M. Pike, president of the Minnesota Dental Association; Dr. Charles H. Rogers, dean of the University of Minnesota College of Pharmacy; Dr. E. L. Newcomb, executive vice-president of the National Wholesale Druggists Association; Merle Sanders, president of the National Assoication of Chain Drug Stores; C. A. Borgstrom, president of the Minnesota State Pharmaceutical Association; Frank Stone, president of the Minnesota Pharmaceutical Travelers; Dr. W. J. Hadley, secretary of the Minnesota State Pharmaceutical Association; P. H. Costello, executive secretary of the National Association of Boards of Pharmacy; Warren Gehrs, president of the Wisconsin Pharmaceutical Association; and Bernice Murdock, president of the Women's Auxiliary of the Minnesota State Pharmaceutical Association.

The Minnesota State Pharmaceutical Association presented Dr. Moudry with a Cadillac automobile as a token of the esteem held for him by all branches of pharmacy.

☆ ☆ ☆

A. Ph. A. President-elect Henry H. Gregg is shown here addressing the testimonial dinner honoring N. A. R. D. President Frank W. Moudry.





C. A. Borgstrom, president, Minnesota State Pharmaceutical Association, presenting Dr. Moudry with the keys to the new Cadillac automobile which the State pharmaceutical association had presented him as a token of its esteem.

☆ ☆ ☆

Aureomycin Produces Relief in Shingles

Four cases in which aureomycin produced quick relief from shingles (herpes zoster) have been reported by Drs. M. L. Binder and L. E. Stubbs, of Newport News, Va. First clue to the possible use of aureomycin against shingles came when a colleague of the doctors reported improvement in a patient who, while being treated for herpes zoster with roentgen rays, also received aureomycin for another condition.

Accordingly, the doctors administered 500 mg. of aureomycin every six hours for two days to the four patients. In two cases, the rash associated with the disease disappeared in five days. In the remaining two cases, the rash disappeared in four and seven days, respectively.—*J. Am. Med. Assoc.*, **141**: 1050 (1949).

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DELICIOUS FRUIT-FLAVORED HARD CANDIES!

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NEW! and already a prescription favorite for treatment of oral infections!

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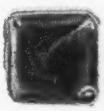

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INFORMATION SERVICE

Members of the American Pharmaceutical Association are invited to submit their professional problems to the Journal, 2215 Constitution Ave., N. W., Washington 7, D. C., giving all pertinent details. Advisory service is provided by the A. Ph. A. library and technical staff and the Journal panel of technical consultants.

BASE FOR SUPPOSITORY

We are asked by our local pediatrician to make for him a small vaginal suppository of penicillin. We would like to know what would be the best base to use and also the buffering. We have a #7 Colton mold for the molding of the suppository.—W. G., Texas

Because of stability, only an anhydrous base should be used for this type of suppository, such as cocoa butter. If a mold is used, the temperature of the melted mass should not be allowed to rise above 40°. Buffering is not involved.

A COMPOUNDING PROBLEM

We have had trouble with the following formula:

Crude coal tar (U. S. P.)	*16.0*
Zinc oxide	*120.0*
Talc	*120.0*
Glycerin	*120.0*
Carron oil	*120.0*

The zinc oxide and talc are incorporated with the glycerin, and the coal tar mixed in. Upon addition of the carron oil, the carron oil emulsion seems to crack. Upon completion of the mixture the oil separates.—J. G., Wisconsin

Our laboratory has investigated your problem and a report follows: "We repeated the method by which Mr. G. prepared this prescription and had the same results; that is, the aqueous portion completely separated from the rest of the mixture. It was thought at first that the carron oil could be added as its components, linseed oil and lime water, in such a way as to make the emulsification take place in the presence of the coal tar and in some cases the solid ingredients. Various other orders of mixing were tried but in every case water separated from the mixture on standing, even though the product appeared satisfactory at first.

If 15 Gm. of acacia or tragacanth were added to the mixture, a smooth final product was obtained but the aqueous portion still separated on standing.

It was found that if Carbowax-1500 or Carbowax-4000 were added, a smooth product was obtained which was quite stable and apparently satisfactory from all viewpoints. The product containing Carbowax was more easily washed from the skin than the other mixtures. The most satisfactory preparations contain 100 Gm. of Carbowax added to the above formula, and Carbowax 4000 produces an excellent paste of very satisfactory consistency. Carbowax-1500 made a much thinner paste which was almost liquid. It must be borne in mind that the addition of Carbowax can be made only by permission of a physician. Carbowax is manufactured by Carbide and Carbon Chemicals Corp., 30 E. 42nd Street, New York 17, N. Y.

The compounding procedure is as follows: The carron oil is added to the molten Carbowax and stirred until cool. The coal tar, zinc oxide and talc were mixed with the glycerin. The Carbowax-carron oil mixture was then added to the latter mixture.

(*Continued on Page 59*)

BACITRACIN-NASAL

CSC

More Than Symptomatic Relief

IN ACUTE AND CHRONIC SINUSITIS

Bacitracin-Nasal-C.S.C. is a valuable means of reducing the period of disability when acute sinusitis complicates coryza. Bacitracin, through its specific antibiotic properties, destroys many of the pathogens which flourish in the nose and accessory nasal sinuses. Desoxyephedrine, through its vasoconstrictor influence, improves ventilation and sinus drainage, thus enhancing the action of bacitracin. Bacitracin-Nasal-C.S.C. may be administered by means of a nebulizing spray or by the Parkinson lateral head-low position. Available at your wholesaler in ½ ounce bottles.

1. Nonallergenic, even on repeated administration.
2. An aqueous solution which does not inhibit ciliary activity.
3. Nonirritant, isotonic.
4. May be administered to both adults and infants.

CSC

When dispensed by the pharmacist each cc. of Bacitracin-Nasal-C.S.C. provides: bacitracin 250 units, desoxyephedrine hydrochloride 2.5 mg. (0.25%), sodium benzoate 1%. The solution is stable at refrigerator temperature for 7 days.

C.S.C. Pharmaceuticals

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THE ASSOCIATION EXTENDS A CORDIAL WELCOME TO THE FOLLOWING MEN AND WOMEN WHO WERE ACCEPTED FOR ACTIVE MEMBERSHIP DURING THE MONTH PRECEDING PREPARATION OF THIS ISSUE.

NEW LIFE MEMBER

Young, Frances C., Aberdeen, S. Dak.

ARKANSAS

Veazey, Fred, N. Little Rock

CALIFORNIA

Babcock, William C., Escondido
Bachtel, Byron S., Los Angeles
Bauer, William D., North Hollywood
Burns, Harold G., Los Angeles
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Cooter, Ernest F., Oildale
Fuller, T. R., Oakland
Hellberg, Carl V., Lancaster
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Garitty, Earl J., Jr., New Orleans
Lagattuta, John, New Orleans
McNamara, John C., New Orleans
Spatafora, John J., Monroe
Waggoner, Floyd C., New Orleans

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Owen, Charles H., Milo

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Papiermeister, Joseph, Baltimore

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Karsh, Max L., Somerville
Solov, Morris, Boston
Stahler, Samuel, Saugus
Tobin, Louis, Dorchester
Tracy, Chester E., West Newton
Zaratizian, Virginia L., Boston

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Matsuda, Chieko, Detroit
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Irey, Donald L., Toledo
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Miles, Curtis W., Cleveland
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Norris, Gene A., Cincinnati
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Reidenbach, Ernest P., Wheelersburg
Sabo, Stephen Wm., Cleveland
Schlichling, David A., Norwood
Sister Helen Mary Flynn, Dayton
Sister M. Bernadette, Columbus
Stafford, Donald H., Oxford
Stotter, Roland B., Cleveland
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Williams, Warren W., Gibsonburg

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Kello, Richard H., Tulsa

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Sigurdson, G. W., Portland
Wilson, Arthur P., Portland

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Bounds, Raymond S., Philadelphia
Burleigh, Robert M., Philadelphia
Cliffe, Albert A., Ridgway
Cohn, Samuel, Philadelphia
Cole, Earl M., East Stroudsburg
Eisenhart, Edwin K., Jr., Bangor
Friedman, Bernard, Philadelphia
Haggerty, George J., Pittsburgh
Kade, Charles F., Jr., Philadelphia
Kauffman, Louis, Hatboro
Kirwan, W. F., Pottsville
Kline, Harold, Kingston
Krehl, Benjamin, Philadelphia
Kreuer, Ralph R., Pittsburgh
Lacko, Emro J., Uniontown
Pais, Isaac, Chester
Piantanida, John L., Sewickley
Rapp, Ralph M., Easton
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Smith, Frank T., Philadelphia
Tancredi, Samuel J., Philadelphia
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Tankard, Barraud, Exmore

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Callison, G. Steele, Oak Hill
Rogers, Kathryn A., Morgantown

WISCONSIN

Barczewski, Clara, Milwaukee
Smits, Lloyd M., Athens

FOREIGN

Giacomello, Giordano, Rome, Italy
Heimler, Cleo A., Kitchener, Ont., Canada
Izquierdo, Juan A., Buenos Aires, Argentina

Deceased Members

Joslyn, Dean B., Elmira, N. Y.
Krafft, Carl L., Lake Forest, Ill., July, 1949
Metzger, Arthur S. (a life member), Cairo, Ill.
Peever, Arthur E., Haverhill, Mass.
Sisti, Anthony J., Jersey City, N. J., July 29, 1949
Zemer, Harry, Indianapolis, Ind., Oct. 1, 1949

INFORMATION SERVICE

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FUNGUS INFECTIONS AND FOOT BATHS

What is the value of sodium thiosulfate solution in foot baths for the prevention of fungus infections at such places as showers in gymnasiums and at swimming pools? Would the use of one of the newer foot powders containing undecylenic acid be of more value in preventing fungus infection of the feet among the members of a high school athletic team?—T. T., Pennsylvania

The use of foot baths with a solution of sodium thiosulfate to prevent infection of the feet with fungus is generally held to be inadequate and of doubtful value even when the feet are immersed for long periods. Better results are obtained by drying the feet thoroughly after showering or swimming and then applying a foot powder, such as one of the newer powders mentioned. [*J. Am. Med. Assoc.*, 141: 886 (1949)]

SOURCES OF PARA-AMINOSALICYLIC ACID

In response to several inquires, para-aminosalicylic acid is available from the Parke, Davis Co., Detroit 32, Mich., under the trade name Pamisyl and from the Panray Corp., New York 11, N. Y., under the trade name Parasal. The product is supplied in powder and tablet form by both firms.

The sodium salt of para-amino-salicylic acid is available also in capsule form from the S. E. Massengill Co., Bristol, Tenn., under the trade name Pasem-Sodium.

PROTAMINE SULFATE AMPULS

We have a request for 10-cc. ampuls of protamine sulfate. We have been unable to find the product listed in any of our current drug books and would appreciate it very much if you can help us locate the name of a manufacturer.—D. C., Illinois

Protamine sulfate is now available from Eli Lilly and Company, Indianapolis, Indiana, as a 1% solution in 5-cc. ampuls. This preparation, a protein-like substance found in the sperm of salmon and some other species of fish, has been found to neutralize the action of heparin. It is therefore stated to be useful in treating heparin overdosage.

INFORMATION PLEASE

(Assistance from our readers will be appreciated. Address replies to Information Service, American Pharmaceutical Association, 2215 Constitution Ave., N. W., Washington, D. C.)

A. S. (Kansas) inquires as to the composition and source of two preparations named Kalmosan and Amalox Ointment.

NEW PRESCRIPTION PRODUCTS

(*Continued from Page 10*)

Administration: Orally; allow to dissolve in the mouth.

Source: Wyeth, Inc., Philadelphia 3, Pa.

PPA CAPSULES

Description: Capsules each containing the antihistamine pyranisamine maleate 25 mg., phenacetin 1 gr., and aspirin 5 gr.

Form Supplied: Bottles of 100 and 1000 capsules; on prescription only.

Action: Treatment of the common cold using the combined antihistaminic-analgesic-antipyretic therapy.

Administration: One capsule every 3 hours at onset of cold, followed by 1 capsule every 4 to 6 hours.

Source: Smith-Dorsey Co., Lincoln, Nebr.

PYE CAPSULES

Description: Capsules each containing the antihistamine pyranisamine maleate 50 mg. and ephedrine sulfate 10 mg.

Form Supplied: Package form not stated by manufacturer; capsules available on prescription only.

Action: Antihistaminic.

Administration: One capsule every 4 to 6 hours.

Source: Smith, Dorsey Co., Lincoln, Nebr.

RONIACOL TARTRATE

Description: Tablets each containing 50 mg. of the tartaric acid salt of nicotinic acid alcohol (3-hydroxymethylpyridine tartrate).

Form Supplied: Bottles of 100 tablets.

Action: Vasodilator used in the treatment of peripheral vascular diseases.

Administration: Orally; 1 to 4 tablets, 1 to 3 times daily.

Source: Hoffmann-La Roche, Inc., Nutley 10, N. J.

TESTROPINATE

Description: An aqueous suspension of testosterone propionate; 25 mg. per cc.

Form Supplied: 10-cc. rubber capped vials.

Action: Provides replacement therapy in conditions where there is a deficiency of androgens.

Administration: Intramuscularly; dosage as determined by the physician.

Source: Smith-Dorsey Co., Lincoln, Nebr.

THENYLFRED

Description: Tablets each containing the antihistamine Thenylene (methapyrilene) hydrochloride 50 mg. and ephedrine hydrochloride 25 mg.

Form Supplied: Bottles of 100 and 1000 tablets.

Action: Antihistaminic combined with an antidepressant.

Administration: One tablet every 4 hours or as prescribed by the physician.

Source: Abbott Laboratories, N. Chicago, Ill.

TRANIDON

Description: An elixir each 5 cc. of which contains hyoscyamine hydrobromide 0.225 mg.; atropine sulfate 0.019 mg.; scopolamine hydrobromide 0.006 mg., and phenobarbital 15.0 mg.

Form Supplied: Pint and gallon bottles.

Action: Antispasmodic and sedative in the treatment of spastic constipation, spastic colitis and nonspecific ulcerative colitis.

Administration: Orally, recommended adult dosage is 1 or 2 teaspoonfuls 3 or 4 times daily.

Source: Sharp & Dohme, Philadelphia 1, Pa.

Chemicals, Diagnostic Aids and Equipment

Ar-Ex Multibase

A universal ointment base for extemporaneous use. Stated to be chemically compatible with all medicaments soluble in water, fats or oils. Packaged in 1-lb. jars. *Manufactured by:* AR-EX Cosmetic Inc., 1036 W. Van Buren St., Chicago 7, Ill.

d-Tubocurarine Chloride

A newly evolved, essentially chemically pure d-tubocurarine chloride. Stated to possess unique processing economies, since (without the necessity of bio-assay methods required by other curare alkaloids) therapeutic formulations can be adjusted weight to volume with increased accuracy and definitively checked by physico-chemical means. *Manufacturer:* The Transandino Co., Palo Alto, Calif. (R. C. Gill Laboratory for Curare Research).

Odorstroy

A pressure-sprayed deodorant stated to destroy odors through reaction of a synthetic organic chemical with odoriferous materials. Available in 1-lb. and 5-lb. "aerosol" containers. *Manufactured by:* American Instrument Co., Inc., Silver Spring, Md.

Purdum-Gregorek Soluter

A hand-operated semi-automatic machine for the introduction of a sterile diluent into sterile, rubber-capped bottles, such as those containing antibiotics. Developed by Dr. W. A. Purdum and Mr. F. G. Gregorek of the Johns Hopkins Hospital Pharmacy to simplify the problem of preparing hundreds of sterile dilutions required daily. *Manufactured by:*

(*Continued on Page 64*)

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Gantrisin* 'Roche', a new and remarkably soluble sulfonamide, is highly effective in urinary as well as systemic infections because of its wide antibacterial activity. Low toxicity virtually eliminates kidney complications. More than 20 articles in the recent literature attest its high therapeutic value and the low incidence of side effects. Now available in 0.5 Gm tablets, bottles of 100, 500 and 1,000; as a palatable syrup containing 0.5 Gm per 5 cc in 4-oz and 1-pt bottles; and in 10 cc ampuls (4.0 Gm) for parenteral use, packages of one and six. Supported by extensive detailing, direct mail and medical journal advertising.

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Typical Days

FROM THE SECRETARY'S DIARY FOR OCTOBER

1st This Saturday devoted to a meeting of the Committee on Minimum Standards for Hospital Pharmacies. Early in the morning to Baltimore via the Pennsylvania with Assistant Director Gloria Niemeyer of our Hospital Pharmacy Division. Much chagrined when it was discovered, while attempting to pay the taxi driver who took us from the station to Johns Hopkins Hospital, that the wallet was missing from its accustomed place. Much telephoning to the P.R.R. Lost and Found Division and borrowing money from G. N. to get home. Dr. Purdum, chairman of the committee, played host to Sister Etheldreda, J. S. Mordell and ourselves at luncheon and much was accomplished in the final effort of the committee to complete these standards.

4th Once more a trip to Baltimore. This time to inspect the pharmaceutical library of the late James E. Hancock for the executors of his estate who may wish to make available to the A. PH. A. some of the valuable pharmacy volumes in this collection. In the evening attending the Maryland U. alumni association's reception to newly appointed Dean Noel E. Foss and Mrs. Foss and meeting many Marylanders from far and near.

5th Glad to hear via long distance telephone that Dean Troy Daniels and his staff at the College of Pharmacy, University of California are willing to undertake the development and manning of our professional display at the San Francisco meeting of the American Dental Association. This group never fails to do its bit for the A. PH. A. on the west coast. Conferring at length with Chairman Powers of the Committee on National Formulary on the agenda for the coming public conference on N. F. monographs and standards.

7th These days settling many a personnel problem growing out of illnesses and incapacitation of staff members and the ever-growing quantity of work to be performed as the ASSOCIATION reaches out to be of greater service to its members. A pleasant luncheon conference with Finance Committee Chairman Swain who was in town for the twenty-fifth anniversary meeting of the Pharmaceutical Contact Committee. In the evening enjoying the speeches and fellowship at the twenty-fifth anniversary dinner of this group and later a conference with A. PH. A. Treasurer Schaefer on fiscal matters.

8th All this day in the National Formulary conferences, ably presided over by Chairman Powers. First came the open conference to which all interested persons were invited and which lasted until noon. In the afternoon the first session of the Committee on National Formulary to be followed by others tomorrow, at which final consideration will be given to the major current problems of the revision. It is pleasing to hear all speak favorably of the revision procedure and the final accomplishment.

11th An interesting staff conference at which some of the projects for the fall and winter were discussed in detail. In the afternoon to Atlantic City by motor for the meetings of the National Wholesale Druggists Association and discussions with the Traymore Hotel management on our own Convention to be held next April.

12th With President Jenkins attending meetings of the N. W. D. A. in Atlantic City and listening to an economy speech by Senator Byrd of Virginia who points with alarm to the growing army of federal employees.

13th Back in the city of Washington with many a telephone call from distant points and endeavoring to adjust appointments so as to take in as many invitations to address the branches and other organizations as possible.

14th Today a visit from Mrs. Elsie Kassner, wife of the late Herbert Kassner, who was for many years a valued member of the faculty of the College of Pharmacy at Columbia University. Mrs. Kassner, after long association with the Pharmaceutical Society of Great Britain, now conducts her own laboratory for alkaloidal assays and other chemical analyses in London. Also working today with the Army Medical Corps in arranging for special participation of pharmacy faculty members in courses dealing with atomic energy.

17th Today a luncheon guest of the District of Columbia Medical Society which held its annual clinical sessions at the Statler. In the afternoon important conferences with F. D. A. Commissioners Dunbar and Larrick, relating to prescription renewals.

18th A conference with Dr. Van Slyke of the National Heart Institute and members of his staff on the Joint Program of Education now being sponsored through more than fifteen thousand pharmacies to make clear the importance of early attention to heart and cardiovascular disease symptoms.

19th Much of this day conferring with representatives of the press and especially Stephens Rippey who ably represents *Drug Topics* and *Drug Trade News*. Also a visit from Commander Briggs, discussing Navy pharmacy and Veterans Administration policies. A brief chat with Johnson and Johnson's able and genial Washington representative, William A. Frailey, who noted the absence of a well-appointed first aid cabinet in our laboratory. Something tells us that we may look forward to the elimination of this discrepancy.

20th On the telephone today from out-of-town were Bob Hardt of Hoffmann-La Roche and Dean Alvah Hall of the University of Southern California, discussing different problems affecting pharmacy on the East and West Coast, respectively, and at night to confer with American pharmacy's ace historian, Dr. George Urdang, who arrived from Wisconsin to take part in the meeting of the honorary consultants to the Army Medical Librarian.

22nd Meeting Dr. Urdang in the morning for a long conference on the approaching centennial of the AMERICAN PHARMACEUTICAL ASSOCIATION with special reference to the historical volumes proposed as memorials of this occasion and it seems that it is later than we think with respect to an auspicious start on this formidable task.

24th This afternoon in New York addressing the Public Health Cancer Association on the pharmacist's part in health education and found the assembled health officers greatly interested in the potentialities of the drugstore as a health information center. Also viewing the scientific and commercial exhibits at the meeting of the American Public Health Association and it appears that the doctrine of disease prevention is receiving most active support in places where it is sure to affect the health index of America.

25th Early in the morning at Lima in Ohio and met by Pharmacy Board Secretary M. N. Ford, who transported us by motor to Ada where Dr. E. C. Elliott had held preliminary conferences on the inspection of the College of Pharmacy of Ohio Northern University. Now a long discussion with Dean Raabe and President McIntosh and late in the afternoon by automobile to Toledo. Following dinner at the Commodore Perry Hotel a nocturnal visit to the College of Pharmacy of the University of Toledo where Dean Larwood and Professor Baker gave preliminary information to Messrs. Elliott, Ford and the writer about the progress of this college of pharmacy.

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BAR AND LOUNGE
Garage

CHEMICALS, DIAGNOSTIC AIDS and EQUIPMENT

(*Continued from Page 60*)

Baltimore Biological Laboratory, Inc., 1640 Gorsuch Ave., Baltimore 18, Md.

Tapeaway

A pressure-sprayed solvent combined with a wetting agent for the painless removal of adhesive tape from the skin. Stated to be non-inflammable, non-irritating and non-toxic. *Manufactured by:* Carand Corp., Racine, Wis.

Tripadene Ampuls

A purified brand of adenosine triphosphate in ampul form. Available to authorized clinical investigators in the treatment of arthritis and other diseases of muscle function. Each unit contains 50 mg. ATP in 2 cc. neutral solution for intravenous use. *Manufactured by:* Schwarz Laboratories, Inc., 202 E. 44th St., New York 17, N. Y.

NEW AND NONOFFICIAL REMEDIES

(*Continued from Page 46*)

served to produce irritation or sensitization of the skin after repeated daily use.

Dosage.—Sodium caprylate is employed in the form of solution powder or ointment in concentrations of 10 to 20%. A solution of 20% is topically applied to the affected skin by means of a cotton applicator or other suitable method after thorough cleansing of the involved parts.

Tests and Standards.—

Sodium Caprylate.—(See monograph on Caprylic Compound, which appears in this issue of THIS JOURNAL.)

R. J. Strasenburgh Company, Rochester 4, N. Y.

Solution Sodium Caprylate: 60-cc., 480-cc. and 3.83-liter bottles. An aqueous solution containing 0.2 Gm. of sodium caprylate in each cc.

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Increasing ℞ Volume

Priscoline

THIS is the first effective vasodilator for peripheral vascular diseases that can be administered orally as well as parenterally. New prescriptions and refills are increasing rapidly.

A recent report in the Journal A.M.A.[1] by Rogers, a general surgical practitioner, told of the variety of diseases including the pains of causalgia and tabes dorsalis that he had treated successfully with Priscoline.

The tablets are a boon in long-continued maintenance therapy of cases of poor circulation so common among the middle-aged and elderly persons.

Priscoline was introduced last year as Priscol.* Already it has distinguished itself as a valuable therapeutic agent and important ℞ item.

ISSUED: *PRISCOLINE—Tablets of 25 mg.: bottles of 100 and 1000. Multiple-dose Vials of 10 cc., each cc. containing 25 mg.*

1. Rogers, M. P.: J. A. M. A., 140:272, 1949.
*The name was changed to avoid confusion with another drug.

Ciba **PHARMACEUTICAL PRODUCTS, INC., SUMMIT, NEW JERSEY**

PRISCOLINE (brand of benzazoline) • T. M. Reg. U. S. Pat. Off. 2/1464D

Aluminum PENICILLIN*

ORAL TABLETS

Greater effectiveness

Oral therapy with Aluminum Penicillin has proved to be effective in fulminating infections such as pneumonia[1] and in other infections due to streptococci, staphylococci and gonococci.[2] It rarely causes gastric disturbance or allergic reactions. The patient's bodily and mental comfort is improved because the necessity for frequent injections is eliminated.

The unique advantages of Aluminum Penicillin are that it is not soluble in solutions of acidity corresponding to that of gastric secretion, but is gradually converted into a readily absorbed form in the intestinal tract. These factors provide for maximum utilization of the dosage administered, higher and more prolonged blood levels.[3]

Sodium benzoate is added because it inhibits the destructive action of intestinal enzymes.[4]

Oral Tablets

Each tablet contains: Aluminum Penicillin, 50,000 units; sodium benzoate, 0.3 gram. Supplied in vials of 12 tablets.

ACCEPTED COUNCIL ON PHARMACY AND CHEMISTRY AMERICAN MEDICAL ASSOCIATION

[1]Terry, L. L. and Friedman, M. The Military Surgeon, Vol. 103, No. 5, November, 1948.
[2]Friedman, M. and Terry, L. L. Southern Medical Journal, Vol. 42, No. 6, June, 1949.
[3]Bohls, S. W. and Cook, E. B. M. Texas State Journal of Medicine, Vol. 41, November, 1945, p. 342.
[4]Reid, R. D., Felton, L. C. and Pitroff, M. A. Pro. Soc. for Exp. Biol. and Med., Vol. 63, 1946, p. 438.

* Patent applied for.

HYNSON, WESTCOTT & DUNNING, INC.
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